

# AMERICAN FORESTS



MARCH 1942

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## American Forests

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### THE AMERICAN FORESTRY ASSOCIATION

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The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of two magazines—AMERICAN FORESTS and CONSERVATION, both designed to keep before the people of the country important conservation questions and issues, the Association carries on educational programs in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. All its resources and income are devoted to the advancement of conservation in the interests of public welfare. All citizens are welcomed to membership.

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## Who's Who

Among the Authors in this Issue

GEORGE H. CECIL (*America's Front Line Forests*), pioneer member of the U. S. Forest Service, served twenty-six years—from 1903 until 1929. For seventeen years he was stationed in the North Pacific Region, until his resignation in 1929 to take charge of the Conservation Department of the Los Angeles Chamber of Commerce.



D. G. Moon

construction reconnaissance and exploration in Mexico and Central America. Coming to the United States, he spent several years in the Middle West, after World War I in which he served overseas. In 1940, Mr. Moon joined the staff of J. E. Serrine & Co., engineers—of Greenville, South Carolina, with whom he is now associated.

JUDGE WOOD (*Kalaukanka—"The Doctor's Pit"*), traveler and writer, was born near Tacoma, Washington, in the "big timber." He has an intense love of trees because he has come to think them "the best behaved of living things." He has traveled extensively all over the Americas and, by air, over the great forests of North America and the Philippines; has flown the Pacific twice and, in lands today in the grip of war, has "smelled the fragrant dwarf blossoms of the magnolias at Wake Island, photographed wild canaries in the ironwoods at Midway Island, America's oldest island possession, and walked through the cocoanut groves of Samoa and among the kapok trees of Guam."

MYRON E. SHOEMAKER (*Example—School of Mankind*), of Laceyville, Pennsylvania—author and practical conservationist—has been with the Pennsylvania Board of Fish Commissioners for more than twenty-five years. In March, 1941,

he resigned to devote his time wholly to writing and educational work.



N. S. Perkins

ation, he speaks with full knowledge of the importance of fir plywood and its many uses in present-day high speed construction under war conditions and to meet war's demands.

STANLEY F. HORN (*Southern Forests and the War*), author, editor and publisher, is a native of Tennessee and knows his Southland and the great contribution her trees are making to the winning of the war. Editor of *The Southern Lumberman* since 1917, Mr. Horn is Vice-President and Secretary of the J. H. Baird Publishing Company.



Stanley F. Horn



Wm. Gould Vinal

Amherst. Dr. Vinal pioneered the field of nature recreation and his recent book shows its correlation with science, civic responsibility and recreation, setting forth a new philosophy of nature leadership.

THE COVER—*California Vista*. In the Angeles National Forest. Photograph by Max Tatch.

WILLIAM GOULD VINAL (*The Forest of the Pilgrims*), educator and author, is widely known as "Cap'n Bill." He is professor of nature education and chairman of the Outdoor Recreation Conference at Massachusetts State College at



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# BIG TREES

The American Forestry Association is sponsoring a national hunt for the discovery and preservation of the largest specimens of the different species of typical American trees. Locate, measure and nominate your candidate in this competition. ACT NOW to make known and save the largest specimens of America's trees. For further details, send for the Association's special announcement of this Big Tree hunt. Mail your nomination with records and pictures to The American Forestry Association, 919 17th Street, Northwest, Washington, D. C.

## MARYLAND'S BLACK GUM



The largest reported black gum—on the property of Henry L. Iddins at White Hall, Maryland



A FEW weeks ago this department received a letter from the Honorable Robert H. Jackson of the Supreme Court of the United States telling about a giant black gum, *Nyssa sylvatica*, on his property in Virginia. The tree, he said, was larger than the largest recorded on our latest campaign progress report.

With this lead for another big tree story, your big tree editor drove to Mr. Jackson's place and photographed and measured the tree, which proved to be a beautiful specimen. The trunk circumference was thirteen feet, the spread of branches about sixty feet, and the estimated height eighty-five feet. This was indeed the king of black gums; but how short was its reign!

A few days after the enthronement of this giant, word came from F. W. Besley, State Forester of Maryland, saying that there was a black gum on the property of Henry L. Iddins, White Hall, Maryland, having a trunk circumference of eighteen feet at four and a half feet above ground, a branch spread of 298 feet, and a height of 109 feet.

If you know of a larger black gum, then you can answer the question: "How long will Maryland retain the honor of having the largest known specimen of black gum within its borders?"

AMERICAN FORESTS



BEFORE the drafting of men for this war, came the drafting of trees. Several months in advance of the drawing of the first draft number in the fall of 1940 the trees were on the march to prepare places for the new army to live and train. Since then the march of trees to war has become a far-

flung pageant that ought to inspire the American people to everlasting appreciation of a bountiful supply of forests.

Up to the beginning of this year, it is estimated, our war effort called for over six billion feet of wood. During 1942, the outlook is that between twelve and fifteen billion feet will be needed. In short, the end of the year will see an "all-out" from the forests of eighteen to twenty billion feet of wood in one form or another. Assuming the content of the average tree to be one thousand board feet—a figure low for the West but high for the East—eighteen million trees will have to be drafted for the winning of this war. And if at the end of the year we have an armed force of 4,000,000 men the forests' contribution to their housing, equipment and maintenance will be at the rate of about five trees a man.

We Americans ought to give thanks that we have five trees to give each man in our battle lines that he may be adequately equipped, sustained and protected against the guns and planes and ships of the enemy. Thus prepared our men can better take it and we can better accept the grim realization that the supreme sacrifice—that of human life—is necessary if our freedom is to be held.

As to lesser sacrifices such as the giving up of trees that the lives of our boys and men may be preserved within the limits of our power to preserve, it is a strange thing that here and there voices are raised in objection. These voices, it would seem, must come from people who hold sap thicker than blood and the conservation of trees more important than winning the war or saving human lives. Theirs is a mistaken and unrealistic view. It is mistaken because the trees now being cut to forward our war effort would in large part be cut anyway to meet our normal peacetime needs for wood. It is unrealistic because opposition to cutting of trees required to house, equip and support our fighting forces fails to grasp the vital need of wood in this war. For example, six billion feet of wood, it is estimated, will be necessary this year just to package the equipment and food which must be shipped to our armed forces. Would any realistic person withhold food and equipment from our fighting men in order to save trees?

There is no doubt that war demands will increase the drain upon our forests but fortunately our forests can take it too—and leave us growing stock for future needs. As patriotic and realistic Americans behind the lines, ours is not the part to sound now the alarm of possible forest deficits growing out of war wood needs or supinely to wring our hands and cry "Woodman Spare That Tree." Ours rather is the fighting part to help by every means at our command to keep our trees backing up our armed forces—five trees to a man or ten if necessary—by guarding well their forest homes, the forest industries and workers and the supply lines of wood to factories and battle fronts.

To win this war we must give our sons and by the same token we must give our trees. And when the war is won and there is peace again, it will then be our part to gird ourselves and make good any serious forest deficits that may result. If we can win the war, we can win the peace, however difficult may be its problems of reconstruction. If we cannot win the war, there will be no peace to win.

*Orin Foster*  
Editor.



Through the mountainous brush, or chaparral, forests of Southern California pass the life lines upon which the gigantic war industries of that region depend

The dread menace to these forests is fire. If this is not successfully met during the rainless summer months, then supply lines may be cut and war industries they serve paralyzed



U. S. Forest Service



# AMERICA'S FRONT-LINE FORESTS

By  
GEORGE H. CECIL

As told to Arnold B. Larson

AMERICA'S titanic struggle with the Axis will be fought in part on the rugged, brush-covered slopes of Southern California's four national forests. If deliberate enemy attacks are successful in this vital area, or if citizens here unwittingly aid the nation's adversaries through carelessness, then Allied progress toward ultimate victory may be seriously hampered.

Such a prediction carries no implication of possible invasion by armed forces, for the writer hardly is qualified to foretell Axis military operations. On the other hand, many years of intimate connection with the Pacific Coast's forests and conservation activities afford him reasonable grounds for pointing out menaces now clearly confronting the lower section of the Golden State.

Among America's 160 national forests, the Angeles, San Bernardino, Los Padres and Cleveland unquestionably rank ahead of all the others in importance to national defense. This is no typical California indulgence in superlatives, but an unchallengeable actuality which the United States Forest Service recognized

when, immediately after the Pearl Harbor attack, it ordered the staffs of these four Southern California forests reorganized on a wartime basis, joining them together in a defensive unit. Such action is unparalleled in Forest Service history, and it dramatically reveals the strategic significance of the region in

America's mighty defense efforts.

Even before Japan struck at Hawaii, this group of forests was well known to be unique. Of all the vast areas administered by the Forest Service, the Southern California section has borne the smallest stands of commercial timber and no logging has been permitted for thirty years. Indeed, calling seemingly barren mountains by the name of "forest" frequently has aroused the derision of foresters elsewhere.

The principal growth of this section is classified as chaparral, and it is largely made up of scrub oak, ceanothus, chamise, and the like. There are many who contend it is real forest, but of the dwarf variety which its poetical admirers describe as "elfin forest." It is not merchantable except as firewood, but nevertheless it is extremely valuable because of the protection it affords to extensive watersheds.

The Angeles and San Bernardino forests have the further distinction of being the nation's most intensively used forests from a recreational standpoint. They bear this distinction be-

cause they adjoin the densely populated cities of Los Angeles' great metropolitan district.

The reason the four forests loom so prominently in the defense picture is obvious enough in the light of the close relationship between them and the score of cities on the coastal plain below. It is doubtful if



William V. Mendenhall (left), forest defense coordinator for Southern California under wartime reorganization, confers with Mr. Cecil, secretary of the Conservation Association of Southern California, and S. B. Show (right), United States regional forester for California

there is an equal volume of industrial defense work going on in any other similar group of cities anywhere else in the country.

This was apparent months ago when government figures showed that California topped New York, its nearest competitor in war contracts, by nearly a billion dollars. Involvement in hostilities has sent new billions in this direction, of course, and the result has been tremendous expansion of essential industries.

Since Southern California holds first place in America's aircraft construction, first in the secondary assembly of automobiles, second in tire manufacturing, and is near the top in shipbuilding and oil refining, it naturally has received the bulk of war contracts placed in this state. Nearly all of the life-lines upon which these industries depend for power and for contact by land with the rest of the nation pass through

forests is careless use of fire by forest visitors and cabin owners. Even in times of peace carelessness with fire has been a veritable hydra-headed monster whose devastations have taxed the full strength of forest officers in this section to restrain and repair. Somehow this brand of destructiveness must now be stamped out, but it must be done, if possible, without closing the forests, for they are far too important to public morale as recreational areas to permit such drastic action unless the situation gets out of hand.

It is not only that fire in these forests imperils important utilities that causes it to be so dreaded. Its destructiveness may extend far beyond such damage. The forest areas in Southern California are steeply mountainous and, when fire sweeps over them, rains during the following winter rush down the burned-over slopes in torrential floods which tear out and



Los Angeles Department of County Forester and Fire Warden

The aftermath of fire in Southern California is torrential floods and consequent widespread disruption to industry itself as well as to its supply lines

the four forests. The Angeles and San Bernardino forests in particular are traversed by lines—power, water, oil, telephone, telegraph, rail and highway—which, if cut, would leave the coastal cities they serve in a state of paralysis.

There are several weapons with which these utilities might be attacked, but the most to be feared is fire. Always fire has been the deadliest menace to these forests, and never more so than today. The explosive nature of Southern California's forest cover during the rainless months of summer and fall is bound to invite incendiary attempts. It is folly to play down this peril, for only by arousing the public can adequate protection be provided to guard against such attempts.

Added to this dangerous threat against the four

bear along enormous quantities of soil and heavier material.

When this occurs on a large scale, homes, stores, and factories in the thickly settled path of the flood are washed away. Lives are lost. Highways are blocked and bridges are cast aside. Streambeds on the plains below are insulated with detritus so that instead of sinking in and raising the underground water level, the concentrated precipitation rolls swiftly to the sea.

Little imagination is required to portray the widespread disruption of normal activities which occurs under such circumstances. Even factories and businesses whose facilities are not directly impaired by the destructive waters feel the impact of the disaster through halted

(Continuing on page 141)

# PINES, PAPER—AND THE NETHERLANDS EAST INDIES

By D. G. MOON

Photographs by the Author

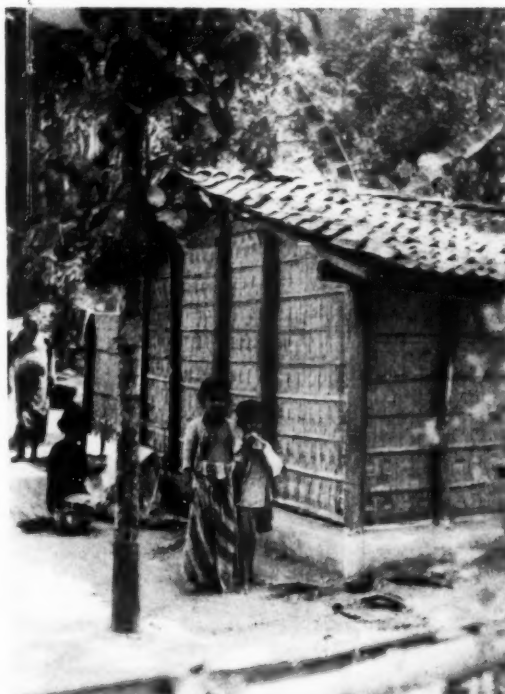
IN THE colonization of the Netherlands East Indies the indomitable Dutch have shown a remarkable aptitude for modernization and development of natural resources, and are now showing the same spirit in their defensive measures and application of fighting equipment, so much of which they were dependent upon receiving from this country.

This is first-hand observation. In October, 1941, as representative of the engineering firm of J. E. Sirrine & Company of Greenville, South Carolina, I visited the Indies at the invitation of their government. My company had been engaged as consultants for the preparation of plans and development of a pulp and paper mill, along with by-products and chemical plants, in northern Sumatra. For among the newer projects in this region has been the rapid development of a pine forest cultivation by a carefully controlled second growth crop of fast growing pines (*Pinus Mercusi*) for production of naval stores, gum, rosin, turpentine and pulpwood. Later on I shall deal with this development at length, but first a glimpse of the Netherlands East Indies.

One ordinarily associates the Indies with their major capacity for cultivating rubber, coffee, tea, palm oil and other products for export as well as with oil, tin and other minerals. However, many other fields are being rapidly investigated and developed with the aid of splendidly equipped and well organized technical laboratories under government supervision. And, while the people of the Netherlands Indies for many months previous to actual hostilities felt that war with Japan was imminent and unavoidable, they adopted the policy of going right ahead with their plans where they did not conflict with their energetic preparations for defense, rather than lose time by sitting down and waiting to see what would happen.

With the war clouds already gathering, I set out from San Francisco in September by Pan American Airways Clipper. The journey to Singapore was made in eight days, with overnight stops at Honolulu, Midway, Wake, Guam, Manila, and while the lid of censorship was heavily imposed, it was obvious that

Under the Dutch, and with assurance of a stable rice crop, hygienic and educational facilities, the Malaysians are a contented people and skilled workers. At right, a Malayian soldier





Native sawmill in Java where forests are almost entirely under government supervision

these piers in the Pacific Ocean bridge were under preparation for defense, and the future transportation facilities over this route would include provision for land planes which could make the crossing in almost one-half the time of the slower Clipper sea planes.

From Singapore, where feverish activity was apparent and troops from all sections of the British Empire were in evidence, the journey was continued by Royal Dutch Air Lines to Batavia in Java, where the Allied Nations are now taking their stand.

The Netherlands Indies island possessions as a whole have an area of 750,000 square miles, with a population of over 70,000,000. Java, the most densely populated and cultivated island, with only 51,000 square miles, or five per cent of the total area, has seventy per cent of the population, approximately 42,000,000 natives and 200,000 Europeans; whereas, Sumatra, the next most important island, with 185,000 square miles, or three times as big as Java, has only 8,000,000 natives and 50,000 Europeans.

Batavia, the seat of the Netherlands East Indies Government in Java, is a modern city of 600,000 population of which 40,000 are Europeans. It has fine modern hotels, government buildings, clubs and homes, all of which, while originally white, had been camouflaged with dark colored paints. Bomb proof

shelters and trenches were in evidence everywhere, periodical black-outs were in force, and the element of preparedness was apparent in every direction. This was true of all the cities in Java and Sumatra, and, in addition, the many splendid landing fields throughout the islands were protected and vital industries in remote sections fully prepared for a "scorched earth" policy should invasion come.

The success of the islands' cultivation of plantations and development of industries has been made possible mainly by the excellent handling of native labor by the Dutch government. With no exploitation, assurance of a stable rice crop, hygienic and educational facilities, the Malayan is generally a contented smiling worker, and shows considerable aptitude in entering the ranks of skilled labor such as machinists and clerks.

In Java, to feed the rather heavy population, practically all usable territory has been put under cultivation and, with Dutch tutelage, all resources have been brought to play, including a very thorough system of irrigation canals, dams, and control works. Thus, about sixty per cent of the island of Java is under cultivation for native agriculture, of which almost one-half is for rice, the staple native diet. The forests and plantations of both Java and Sumatra are almost entirely under government supervision for rub-



One of the trees which produce for the Netherlands Indies half the world's rubber supply

AMERICAN FORESTS



ber, gutta, sugar, tea, coffee, palm oil and copra.

The Netherlands East Indies produce about one-half of the world's rubber supply of 1,400,000 tons annually, almost all of which comes from the Far East, and of which the United States consumed 811,000 tons a year previous to the OPM's cutting our consumption to 600,000 tons in July, 1941. In the Indies, the Hevea rubber trees are generally found to produce about 400 pounds of dry rubber an acre from 200 trees, which are tapped at from five to seven years of growth. All told, there are probably over a thousand rubber plantations, totalling 3,500,000 acres in the islands.

The management and direction of these plantations, together with the converting by-products and chemical plants, is carried out under the Netherlands East Indies Government Plantations, ably directed by H. V. Van Lennep and a skilled staff of plantation managers, technicians and research men with well equipped laboratories and central offices in Batavia, Java.

While the Indies as a whole are essentially an agricultural producing land, the island of Sumatra is rich also in mineral wealth, such as tin and gold. Too, there is much oil, which is also found in Borneo. These products are coveted by the Japanese and were being closely guarded or prepared for immunization in the event of invasion.

Excellent machine shops, fabricating and industrial plants are to be found in Java and Sumatra. The Indies rely, however, on imports of iron, steel, copper and other basic raw materials, and the economic use

and careful conservation of these essential materials was strikingly evident throughout the islands. Some excellent wood structures were also noted, utilizing native teak or Damar Laout woods.

One could not help but be impressed by the perseverance, determination and aggressiveness of the Dutch colonists and their executives. When the younger men emigrated to the islands from the parent country, they did not go for just two or three

years with the idea of making a stake and returning; they went to stay and develop the country and make their permanent homes there, and only those with special aptitude or technical knowledge were acceptable. They work hard and for long hours. Their number being relatively limited, they obtain a comparable share in the results of their efforts, and maintain a high standard of living and sociability in their new communities. Now, with the necessity of defending the country that they worked so hard to develop, it is calling for the maximum of effort and sacrifice in the firm belief that



Among the newer developments in Sumatra is pine forest cultivation for pulpwood and naval stores. Here is a virgin stand of fast-growing *Pinus Mercusi*

the United States will back them to the limit.

While censorship forbids essential details, the Dutch preparations for defense and immunization of their plantations and mineral wealth, as well as their industries, airports, cities, and facilities were very strikingly apparent and undertaken well in advance of actual hostilities with the limited facilities they could acquire. They can be depended upon to give an excellent account of themselves.

After covering the islands of Java and Sumatra in

company with officials of the Government Plantations by air, train and motor, the question of obtaining transportation back to the United States to start the active negotiations for their requirements was found to be somewhat difficult, the war clouds being closer. Finally, reservations were obtained over the southern route, none being available from Singapore. The return trip was made in late November by Royal Dutch plane, via Bali, Koepang on the island of Timor, to Darwin, Australia, thence across Australia to Sydney. From here, via Tasman Airways, I went to Auckland, New Zealand, to connect with the Pan American Airways Clipper, returning to the United States via Noumea in Free French Caledonia, Suva Fiji, Canton Island, Honolulu (one week previous to the attack on Pearl Harbor), and finally San Francisco.

In most of the stops on the return route blackouts were in force, preparedness for defense was obvious, and censorship prevailed. Australians and New Zealanders, with ten per cent of their male population in the Imperial forces, were at vital bases, and American flyers of our Army and Navy were even then showing up at these outlying points on their way to secret destinations. The hope of the Far East generally being that more planes and materials of war would be on the way to them in a steady stream, as the break was certain to come on the basis that the Japanese war lords would commit national "hari-kari" rather than lose face through a negotiated peace.

But back to *Pinus Mercusi*, the fast growing pine indigenous to the volcanic mountain slopes of the Indies, and the part they are playing in the development of a naval stores and pulpwood industry. In the April issue of AMERICAN FORESTS I will deal in full with investigations and experimentations, of growth control, of operations, of the proposed pulp and paper mill. In preparation for this, perhaps a brief history of this species will be in order.

In their virgin state, these pines occurred throughout the mountain jungle slopes, considerably scattered, but running tall and straight to heights of 200 feet and over, and circumferences of eleven feet or more. Their seeds generally proved unprolific in the shade of the denser hardwoods, except where sandslides cleared the growth and competition took place for

reproduction between the various other species of trees.

The early native aborigines came, cleared some of this jungle, burned it to provide clearings for their fields and feed for their cattle, or to provide an area for driving deer and other animals in their seasonal hunts. Thus, the native population developed extensive grass areas for their use. The big pines scattered their seeds to these clearings and, due to their vitality and persistence, some young trees lived in a continuous battle for survival against fire. Where no fires occurred for a year or so, these young trees had a chance to develop rapidly.

The Achinese of northern Sumatra were the last natives to submit to colonial influence and, in fact, the last treaty with the native princes was not signed until 1907. With peace established, the colonists noted the possibilities of turpentine, but it soon developed that these older trees did not offer a good commercial proposition, as they had a restricted limit in tapping, their growth vitality being lowered by the fires and jungle growth, and were so scattered on the mountain slopes that transport was difficult.

Investigation by government foresters indicated that the second growth when allowed to survive gave a much higher yield of gum and had a very rapid growth. The age of the old trees was uncertain due to the absence of annual rings, and rate of growth could only be made by observation. Such ring indications that are visible are due only to seasonal variations of more or less rain, in a climate where the temperature varies but a few degrees throughout

the year, averaging around eighty degrees Fahrenheit with considerable rainfall and humidity.

In 1924, the government decided to make experiments in regard to promoting the growth of these pines for turpentine and placed the control under the Government Plantations Department. The initial experiments were carried out in a slow but methodical manner for the next nine years, demonstration forests being started with a view to a future supply of pulpwood as well as rosin and turpentine.

(In the April issue, Mr. Moon will tell more of these experiments and what has developed from them.—EDITOR.)

## WAKE UP AMERICA!

The 1942 forest fire season carrying a potential rain of fire to hamper prosecution of the war is one month nearer. Since the situation was called to the attention of Congress and the public a month ago by The American Forestry Association, preparations to cope with forest fires which normally occur in the United States, plus additional thousands that may be set this summer by enemy saboteurs, are uncompleted and moving slowly.

Men and money, without which forest fires cannot be controlled, are still lacking. Fire-fighting men in forest regions where war industries are concentrated are still being drained off to other work. The status of the CCC is still undetermined. And as this is written, no special appropriations to meet the forest fire emergency as it threatens war efforts are before Congress or even out of the Departments. Departmental hopes of getting cooperative funds from the OCD appear to have gone cold. In short, preparations as seen in Washington are alarmingly static and indecisive.

The U. S. Forest Service which normally carries the brunt of federal responsibility for dealing with forest fires is genuinely worried. It has plans made for guarding critical war areas against forest fires but men and money are needed to put the plans into effect as the fire seasons come on. Based upon insuring war-needed supplies and industries against disruption by forest fires, these plans call for additional funds of approximately \$15,000,000. In a desperate effort to overcome the lack of local labor for fire fighting, the plans call for drawing upon and training for fire fighting service college students in the several states. This training will consume several weeks. In the meantime, the fire seasons are swiftly coming on.

**WAKE UP AMERICA!** One Japanese plane flying over western forests where war industries are heavily concentrated could drop 2,000 incendiary bombs in a single night.—Editor.

# THE CONSERVATION WAR FRONT

THE guayule rubber bill, S. 2152, reached the President's desk on February 17 and was promptly vetoed. The reason, its provisions for the "planting of guayule and other rubber-bearing plants in order to make available a source of crude rubber for emergency and defense uses" were limited to areas in the United States. The President, along with certain members of Congress vitally interested in Pan American relations, wants the provisions extended to the Western Hemisphere. So the bill now goes back to Congress to have this accomplished.

Meanwhile, steps to acquire properties and holdings, along with patents and processes, of the Intercontinental Rubber Company in California, for which the bill authorized up to \$2,000,000, must be held up. It was indicated, however, that the President would make a sufficient allotment from emergency funds to start a vast nursery project in California's Salinas Valley—a project which must be undertaken immediately if field plantings of guayule are to be made within a year. This work will be under the direction of Evan W. Kelley of the United States Forest Service, who has already established headquarters in California.

## Wanted—Sitka Spruce

New sources of Sitka spruce—the wood par excellence for airplane construction—will have to be located and tapped, it now appears, if the war demands of the United States and England are to be met. Production of spruce is said to be running into a bottleneck due to difficulties on the part of spruce mills in obtaining a continuous supply of logs. Several mills, it is reported, have had to close down temporarily.

Sitka spruce grows only in a narrow strip along the Pacific Ocean from northern California to Alaska. In Oregon and Washington it occurs usually in mixture with other species, thus making its logging an individual operation unless other species are removed at the same time. Being a specialty tree, logging has entailed the searching out of individual trees or groups of trees and building logging roads to them. This together with the individualistic and often poorly equipped loggers who engage in this business has proved to be one factor in the failure of logs to be delivered at the mills in the amounts required. Another factor is failure of advance location of accessible supplies.

At the present time, government agencies are making a quick survey of available Sitka spruce in the coastal region of Oregon and Washington and also in Alaska. In the two states mentioned it is estimated that the total spruce stand amounts to approximately nine billion feet exclusive of that within the Olympic

National Park. Much of this timber, however, is inaccessible and the problem is to locate those trees and stands that can be reached with the least possible delay. There is a large supply of Sitka spruce in Alaska. The amount, however, is not known, but it is possible that those forests will have to be drawn upon. This will involve either shipping logs by water or rafting them down the coast from Alaska to the tidewater mills of Oregon and Washington.

## Forestry Regiments May Be Needed

As the war proceeds and widens, with American expeditionary forces beginning to take off for distant lands, forward-looking men in the forestry field are beginning to talk in terms of a need for one or more forest regiments. The picture, as they see it, is that before many months the armed forces of the United States may be spread into many allied countries where local forests are available but where local labor is insufficient to supply the fighting forces with the great amount of timber necessary to the successful waging of war.

Such countries as Australia, India, Mexico, and the South American Republics, it is pointed out, have abundant forests that could be quickly drawn on to sustain local military action if organized forest regiments formed a planned part of expeditionary campaigns. It is also pointed out that should invasion of the United States be attempted, well organized, mobile forest regiments might well be essential within our own boundaries to back up with needed wood swiftly moving tactics by our fighting forces.

Although the War Department has not indicated that it has any present plan for organizing forest regiments, it is believed this possibility is not being overlooked. Among forestry men who see the need ahead, there is a feeling that adequate preparedness for all eventualities might well justify the organization and training of one or more forest regiments in advance of actual need.

In this connection they point out the essential services rendered by the 10th Forest Engineers in World War I. This regiment was organized almost immediately after the United States entered the war in the spring of 1917. During the summer of that year the regiment was trained in this country and in September embarked for France, where it remained until the close of the war. The regiment as first organized consisted of six companies of 164 men each. Later in the year the 20th Forestry Engineers was organized and joined the 10th in France, to make what was then termed the "World's Largest Regiment," numbering over 20,000 men and officers. When these regiments got into operation they backed up the Allies at the rate of one million feet of lumber a day.



# SOUTHERN FORESTS AND THE WAR

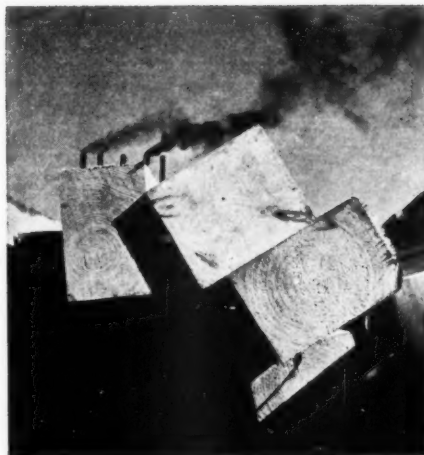
By STANLEY F. HORN



## AS FIR AND SPRUCE OF THE PACIFIC NORTHWEST ARE ANSWERING WAR'S CALL FOR WOOD, SO ARE THE PINES AND HARDWOODS OF THE SOUTH

AT FIRST blush it sounds like a gross and unwarranted exaggeration—that recent statement by a German general that “to be without wood in time of war is almost as bad as being without bread.” From the soldiers’ standpoint, nothing could be worse than being without bread. Anything that is even “almost as bad” is plenty bad. Napoleon was the author of the expressive though inelegantly phrased military axiom that “An army travels on its belly,” and it is still true that in supplying an army food must come first. But a little study of a modern army’s requirements offers convincing proof that the German is right: today wood is almost as necessary as bread. It would be hard to carry on a war without wood—and it would be hard to supply this nation’s needs in wood without recourse to the forests of the South.

As a matter of fact, these forests have been contributing to the people’s military necessities ever since the first settlement of this continent. It was the imminent exhaustion of the Baltic supply of masts and naval stores which moved England to look to the New



Black Star

Big Timbers for Victory

World as a new source of supply early in the seventeenth century. Tradition tells us that the first export shipment from this continent was a cargo of pine masts shipped to England from Virginia in 1609—masts so long that they had to be cut down before they could be made to fit in the ship’s hold.

After the colonies had won their independence—in part due to England’s shortage of mast timber—the forests of the South supplied material for the new country’s fledgling navy, not only pine for masts but the valuable live oak for timbers and knees. In fact, the first thing in the way of a national forest in this country was a reservation of live oak timber land near Pensacola early in the last century. “Old Ironsides” was built of Georgia live oak and pitch pine, and



Many tractors labor in the Piney Woods to house the million soldiers located in or near the South. The average camp requires 60,000,000 feet of lumber, mostly pine



Southern hardwoods are also needed to carry on the war—gum and cottonwood for crates and boxing, oak for office furniture to save steel

these woods were used not only for the war vessels of this country but were shipped to every maritime nation in the world. John Paul Jones fought from the deck of a ship built of southern timbers, and poplar from the hills of Tennessee was used to build the flatboats which carried the Tennessee riflemen down the Mississippi to fight the Battle of New Orleans. A southern wood even furnished the nickname of the hero of that battle—Old Hickory.

In all our succeeding wars the southern forests have played their part, and in World War I there were hundreds of millions of feet of southern woods used for building Army camps and other miscellaneous military uses, including the tremendous amounts used for the building of the fleet of wooden ships in response to the slogan, "Ships will win the war." Southern lumbermen played a big part in the winning of that war, but this was only a dress rehearsal for the big show later on. Now at

last an active participant in World War II, after months of pseudo-neutral defense, the nation is experiencing an impressive demonstration of the part played by wood in modern warfare. Civilian needs have temporarily faded into a place of secondary importance, and today the 10,000 sawmills of the South are devoting their energies to military requirements, direct and indirect. Probably never before in the history of American business was such a sudden demand made on any industry as was made on the southern lumber manufacturers in the fall of 1940 when the defense program was launched and the Army was suddenly confronted with the huge task of providing housing facilities for the more than a million men so soon to be mustered into service. In an almost hysterical burst of activity the Army drew its plans and placed its orders for the lumber needed to build the necessary camps. In their haste and in their lack of experience



Production of lumber by the South's sawmills during the war years, says the author, may not create great shortages. Trees grow fast in Dixie

the Army procurement officers made abnormal demands on the lumber industry. The first camp at Falmouth, Massachusetts, affords an example of this. The decision to build the camp was announced on Friday of one week, and a group of southern lumbermen was hastily summoned to Washington by telegraph to submit bids. Bids were taken on the following Monday and on Wednesday the orders were placed. The orders called for some unusual and hard-to-find sizes and grades, and some of it had to be delivered to Falmouth within seven days. The orders were placed and filled, however, without appreciable delay.

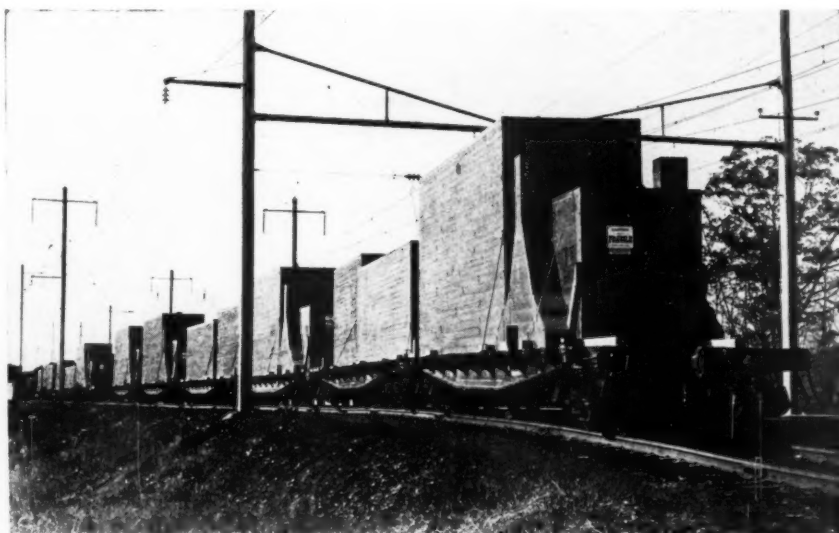
After Falmouth the Army announced plans for nine more camps, all within the southern pine marketing area. Each of these camps required from 60,000,000 to 120,000,000 feet of lumber, and detailed specifications were prepared and mailed out to all those who wanted to bid. Incidentally, the preparation of these specifications constituted the largest



Our mechanized army moves to distant battle fronts encased in wood. Here are tanks, carefully crated, ready for shipment

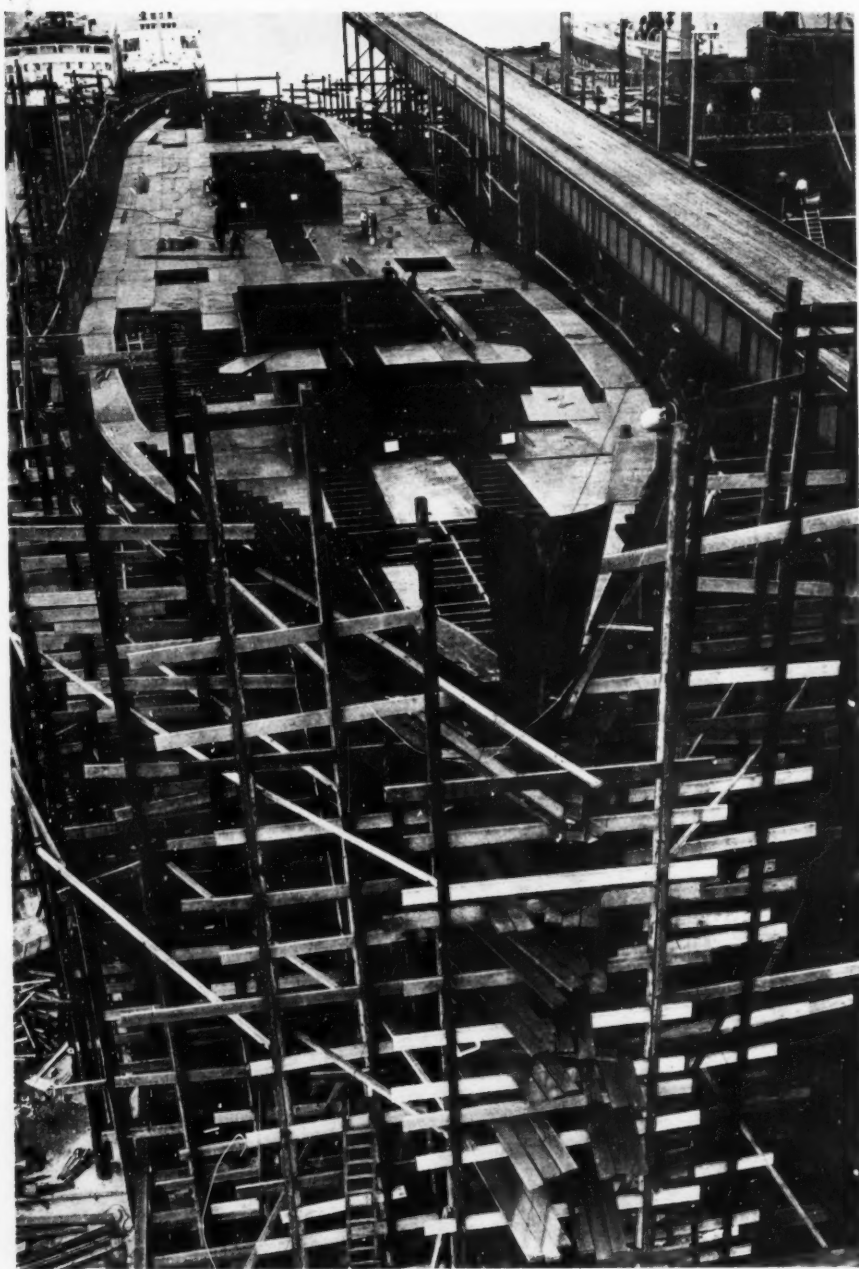
mimeographing job ever undertaken by the War Department, and it took two weeks to tabulate the bids for the lumber for one camp and announce the successful bidders. Since those early days of trial-and-error methods, however, the Army has devised an excellently effective and fair method of buying its lumber which cuts through the heart of the traditional and notorious red-tape system. Now when the Army wants to buy lumber it is simply announced that a letting will be held at some conveniently located point, and all interested lumbermen are invited to be present and bid on each item

as it is announced. The bids are tabulated then and there and awards are made within thirty minutes of the time the bid is filed — and shipments can start immediately. This new plan not only speeds up the process of procurement but also facilitates a great increase in the number of suppliers, thus spreading the production responsibility throughout the industry. At the most recent lettings, held in New Orleans and



Courtesy of the Glenn L. Martin Company

Bombers are crated for long journeys—each crate requiring as much lumber as is needed to build a five-room house



OEM Defense Photo

Shipbuilding calls for wood—even a battleship requires 300,000 feet. Here a veritable network of southern pine cradles a vessel

Richmond, the Army engineers bought more than 527,000,000 feet of southern pine boards and timbers within a few days time. There were 442 bidders present at these lettings, and not one of them went away without some share of this business. Some of these orders were sublet to other manufacturers, and today there are hundreds and hundreds of mills throughout the whole South busily engaged in producing the lumber to fill this record-breaking order for the product

of the southern forests.

In the early days of the national defense effort one prominent and far-seeing general made the statement that "the ultimate bottleneck is raw materials." The truth of this has been abundantly and well-nigh tragically demonstrated as the war effort has developed; but it is to the everlasting credit of the southern forest industries that there has been no bottleneck in the raw material supplied by their sawmills. The demands on their productive facilities have been great and unusual. But there has been no bottleneck.

The most conspicuous and spectacular use of wood in this war has been, of course, in the building of the numerous Army camps. For climatic and strategic reasons most of these camps have been located in or near the South, and in their construction literally billions of feet of southern lumber have

been used. The average camp will require a minimum of around 60,000,000 feet of lumber, some much more than that; and this does not include all the auxiliary buildings that go with such a camp—recreation halls, chapels, etc. Most of the lumber used in the building of these camps has been southern pine, but the softer species of southern hardwoods have also played their part in the camp building program. In fact, during the early days before the southern pine industry was

AMERICAN FORESTS



fully geared to all-out war production, the supply of lumber for camp building purposes might have been inadequate had it not been for the utilization of these hardwoods. Hardwood producers are more accustomed to having their lumber used in the manufacture of some finished product and have not been familiar with construction lumber requirements; but an official inspection rule for hardwood construction boards was quickly improvised, and gum and cottonwood and poplar boards poured out from the southern hardwood sawmills into this unaccustomed use.

Nor was the Army alone in its demand for lumber for housing the men in the armed service. The Navy also embarked on a large emergency building program—not as large as the Army's, but enough to require millions of feet of lumber. Recruits for the Navy are not placed immediately on the ships where they will eventually serve. They are housed ashore in barracks for training—and these buildings had to be constructed in a hurry and built largely of southern woods.

Closely allied to the use of lumber for Army and Navy camps has been the call for lumber for defense housing. Incidental to the defense and war program, big new manufacturing plants have sprung up throughout the country to make airplanes, powder, shells and the scores of things needed by a nation at war. These plants have used large quantities of southern woods in their construction, but even more in the provision of housing for their employees.

Aside from the Army camps and defense housing and other construction, the largest single use of lumber in the war effort has been in the box-making field.

Few civilians have any conception of the vast needs for wood in the manufacture of boxes and crates for the shipment of Army and Navy supplies, particularly ammunition. Shells for the big guns can't be shipped in bulk—they are encased in specially designed crates or boxes which, in the aggregate, use a tremendous lot of lumber. A mechanized Army needs a steady flow of supplies and parts—all calling for crating or boxing. Those big tanks must be encased in sturdy

crates before they are shipped abroad. The high-powered bombers are flown across the ocean, but the thousands of fighter planes are shipped in crates. With each of these crates requiring as much lumber as is needed to build a five-room house, and with the 1942 plane production stepped up to 3,000 a month, the airplane industry is going to need a lot of lumber for crating. Already billions of feet of southern woods have been used in the box and crating field, and it has been officially estimated that during the coming year from five to six and a half billion feet of lumber will be required for this purpose. During the peace-time days the Army specifications showed a preference for the old-fashioned white pine for boxes, but these specifications have now been extended to include a number of other species, including southern pine and the southern hardwoods so extensively used in the manufacture of boxes for the ordinary industrial trade.

Another large and additional demand on the forests of the South has been created by the mushroom expansion of our shipbuilding industry. The program for merchant ship construction during the coming year is of unprecedented proportions, calling for the launching of 5,000,000 tons of needed ships. These merchant vessels have steel hulls, but there is plenty of wood used in them—not to mention the giant network of wood scaffolding which surrounds each one of them before it is launched. And, incidentally, even a modern battleship requires more than 300,000 feet of wood in its construction. Mention of the increased impetus given our shipbuilding industries by the war would be incomplete (Continuing on page 136)



The Army is building many non-sectarian chapels for its new legions. Even the interiors are of wood construction

# THE DOUGLAS FIR PLYWOOD INDUSTRY

By N. S. PERKINS

Photographs by The Douglas Fir Plywood Association

WEST of the Cascade Mountains in the States of Washington and Oregon, a young industry within the past few years has raised its shoulders above the towering Douglas firs that green the landscape of the Pacific Northwest. It is the manufacture of plywood. Unheralded and relatively unknown for a quarter of a century, this industry has emerged as one of the major enterprises of the Northwest. From a small industry ten or fifteen years ago, its product as it

came from the mills approximated \$50,000,000 in 1941.

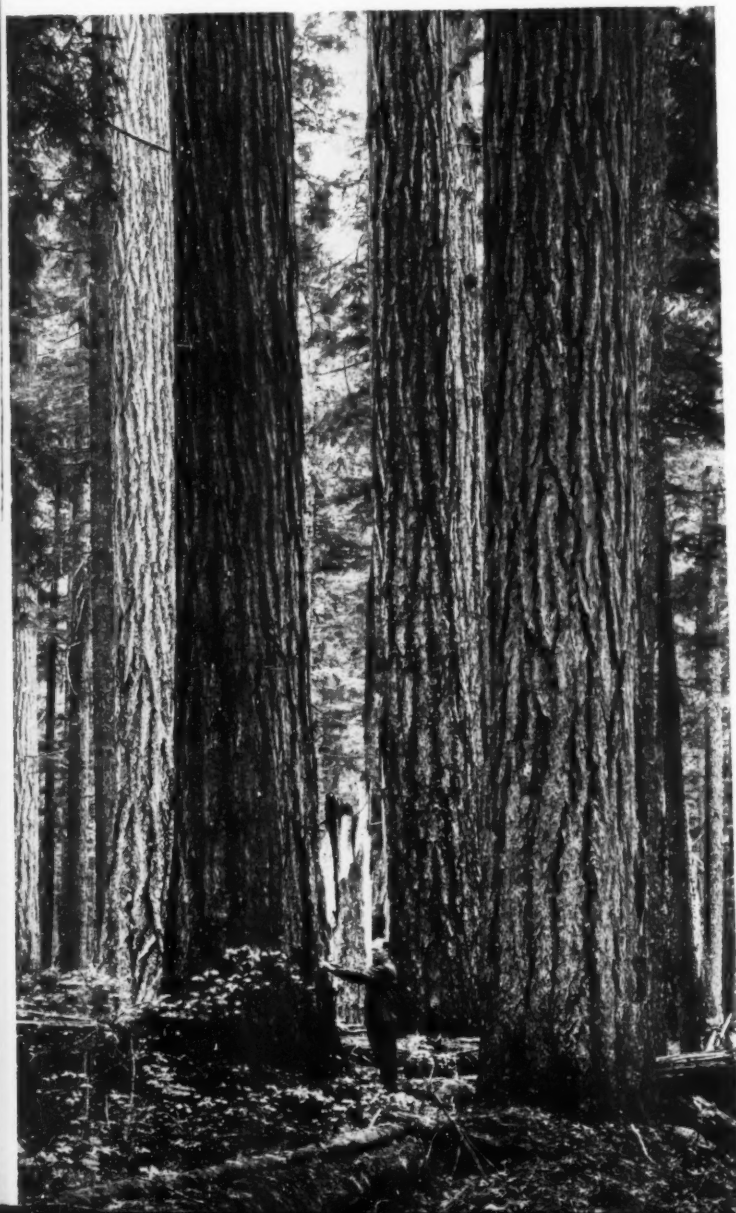
Today, Douglas fir plywood is recognized as doing more different building jobs than any other single material, and it is flowing into virtually every state and county of the union to help win the war and build the peace. One of its outstanding contributions to the building for defense has been and is the housing of the armed forces and the workers in defense industries. Plywood has helped to speed the construction of cantonments in every part of the nation. As an example, fifteen million square feet of plywood panels went into the expansion of Fort Lewis, Washington, to full-war status.

When airplane factories, shipyards and navy yards mushroomed, officials of a dozen different governmental agencies looked to prefabrication as the only answer to the acute and immediate need for housing facilities. Prefabrication,—the mass-production of houses from assembly lines,—and plywood long have been allied. Now, the two are so closely joined it is almost impossible to distinguish one from the other. From Indian Head, Maryland, to San Diego, California, and Fairbanks, Alaska, thousands of all-plywood prefabricated houses have been erected with amazing speed. Today, there are perhaps one hundred different firms "manufacturing" houses; the vast majority of them rely on plywood as the primary material that makes these buildings possible. Virtually every pre-built house is at least partly plywood.

News-making in recent weeks has been the development of an all-plywood airplane which in many ways is said to be superior to any other type aircraft. Some countries already are using training planes having plywood fuselages and wings. The panels also are being shaped into patrol vessels, pontoon bridges,

Douglas Fir monarchs of the Pacific Coast, hundreds of years old, green the western slopes of the Cascade Mountains and provide material that is revolutionizing wood construction

U. S. Forest Service



Near the forests stand the plywood mills and adjacent to each mill is a log pond into which the great sticks of timber to feed the new industry are crowded



assault boats, ammunition boxes, engine crates. War needs account for sixty-five per cent of the plywood output, but expansion of capacity was great and rapid prior to the emergency as plywood manufacturers geared to meet expanded civilian demands.

Starting three years ago, a vast new market for plywood was opened in the construction field with the panels being used for inside and outside walls of homes and buildings and for such hidden parts as wall sheathing, roof sheathing and subflooring. These new uses were added to the hundreds of ways that plywood already was serving the economy of America in diverse and often unnoticed ways—for furniture, cabinets, door panels, mirror backs, refrigerator cars, trucks, highway signs, store displays, shopping bags. This ubiquitous man-improved product has been dubbed a giant double or triple decker sandwich of wood and glue, “good for everything but food and kindling.” Technically, plywood is defined as “a built-up board or piece of wood made of three or more plies of veneer joined with glue and so laid that the grain of adjoining plies is at right angles.”

Douglas fir plywood is most commonly seen in large panels four feet wide and eight feet long, and in thicknesses of one-fourth to three-fourths of an inch.

Panels, however, can be made eight feet wide and as long as sixteen feet. And fir plywood as thick as three and five-eighths inches has been used by bridge engineers as gusset plates to join timber truss members.

In recent years, science has developed waterproof synthetic resin glues and, as a result, a special exterior type of fir plywood may be seen in thousands of boats, building exteriors, signs and similar outside application.

Although plywood provides a panel or board wider than is practicable in ordinary sawn lumber, and of almost any thickness to fit the particular use, it also overcomes certain inherent weaknesses in wood by capitalizing its virtues. Mother Nature arranges the wood cells in a tree to withstand ideally the stress of

wind and weather, but when the tree is felled and cut into boards, the wood has only about five per cent as much strength crosswise as it has lengthwise and can be split without much difficulty.

The ancient Egyptians discovered that by gluing thin sheets of wood crosswise in layers, with the grain direction in adjacent plies at right angles, they could eliminate splitting almost entirely. This cross-lamination also developed a several-fold strength increase crosswise without detracting unduly from

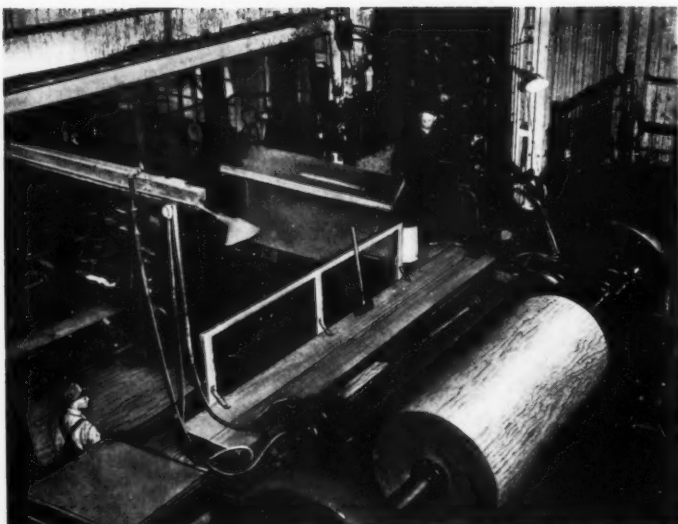
From the age of King Tut and before, the gluing together of pieces of wood has come down to modern times. The Egyptians employed the art mainly to achieve decorative effects and their marvelous skill is attested by some of the examples of inlay work unearthed by archeologists. This same motif dominated succeeding eras of civilizations until comparatively recent years when man with the aid of science turned the art to utility in the form of a product called plywood, whose uses are becoming legion.

Today many species of wood are used in the making of plywood both for utilitarian and decorative purposes. Douglas fir from the Pacific Northwest, by virtue of its great, clean-barked trees, furnishes by far the largest volume. The phenomenal growth of plywood manufacture in this region is an interesting and significant saga of American industry.—EDITOR.

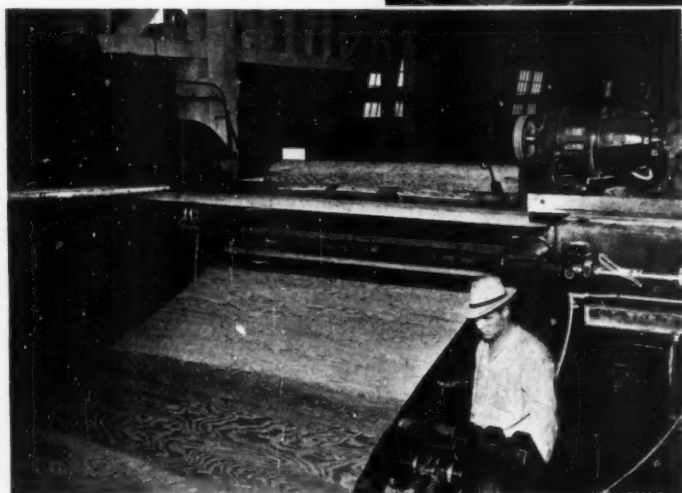
the strength longitudinally. Furthermore, although wood shrinkage may be troublesome across the grain, it is practically eliminated in plywood by the glue-bonding of adjacent longitudinal plies.

In addition to these favorable strength characteristics, plywood has considerable insulation value, good acoustical properties, is easily worked, is economical to apply and may be finished pleasingly with stains, paints or wallpaper, a unique group of features that appeal to builder, home owner, and industrialist alike.

A trip through a Douglas fir plywood mill clarifies much of the mys-



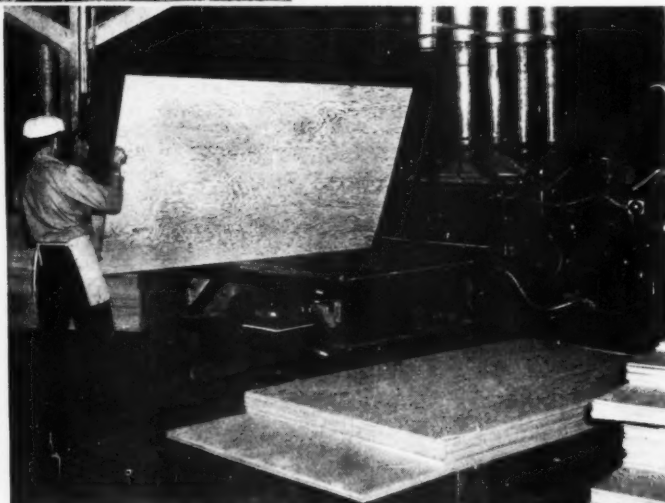
A "peeler" log on the lathe — so called because sheets, only a fraction of an inch thick, are peeled from the great logs of Douglas fir



A ribbon of wood as it comes from the lathe, later to be shaped into plywood, bound together with almost imperishable glue

tery associated with this fascinating product. Huge logs of choice fir trees averaging about four feet in diameter are cut into "bolts" of desired length, usually about eight feet. The bolt is then hoisted from the log pond to the log deck, stripped of its bark and placed in a giant lathe which rotates it against a long sharp knife, peeling off an almost continuous sheet of veneer, much as wrapping paper is unwound from the roll. This veneer, chiefly one-tenth or one-eighth of an inch thick but varying from one-sixteenth to five-sixteenths of an

inch, is clipped to provide proper widths, and to eliminate serious defects, and then is sorted, dried, graded and glued into panel assemblies, mostly in specified dimensions and grades. These veneer assemblies are then placed in huge presses, either hot plate or cold plate, depending upon the type of plywood and kind of glue being used.



A finished panel of plywood, smoothed by the sander and trimmed to exact dimensions and thickness to meet contract specifications





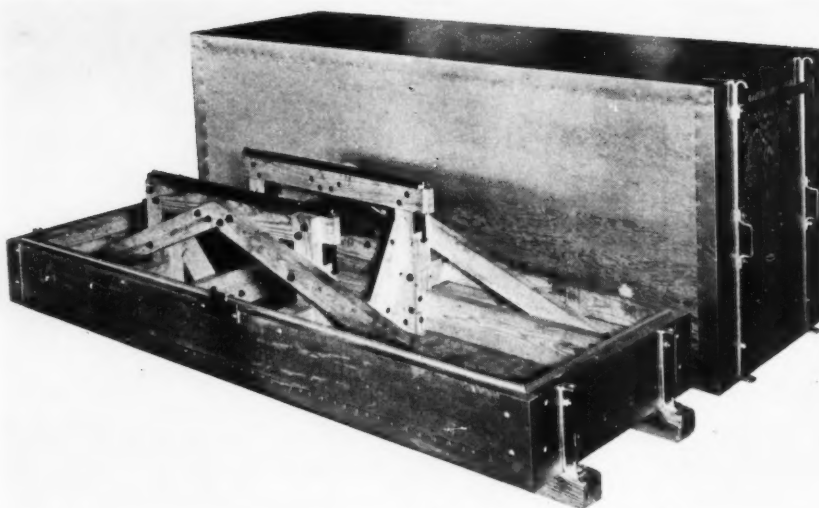
For defense — dormitories for war workers are built of prefabricated sections like this. On one job accommodations for 1,000 men were erected in forty-five days—just half the contract time

The modern hot press opens like a giant accordion to receive one, or at the most, two panel assemblies in each of the openings between the several large steam-heated plates. The press is then closed and within a few minutes the adhesive has set. The press is opened, the plywood removed and the same process repeated. Both phenolic resin (waterproof) adhesives and moisture-resistant protein glues are employed in hot plate pressing.

In cold pressing, which is still widely employed, only moisture-resistant protein glues, principally with soya bean and casein bases, are used. A single stack of panels, often four feet in height, is assembled, placed in the press and clamped under about 150 pounds per square inch pressure. The stack is immediately removed from the press and stored for eight to ten hours until the glue has set firmly, after which the clamps are released. Later, panels are trimmed to exact dimension, sanded to a satiny smoothness and subjected to a final careful inspection prior to grade marking. With this done, the final product is ready for shipment to



The house of today and tomorrow — all plywood-prefabricated of factory-formed panels, used for speed and economy in construction



Strong cases of plywood, heavily iron-bound, are used in the national defense for the shipment of various types of aircraft assemblies, cylinders, engine parts and bombs

National Bureau of Standards, and because dry-built methods cut the time and cost of application, plywood is being widely used for sub-floors, wall and roof sheathing, interior wall and ceiling panels, built-in cabinets and the like, as well as for exterior paneling and siding. And tens of millions of square feet of fir plywood are going into military use for barracks, tent platforms and other cantonment buildings, where speed—and more speed—in

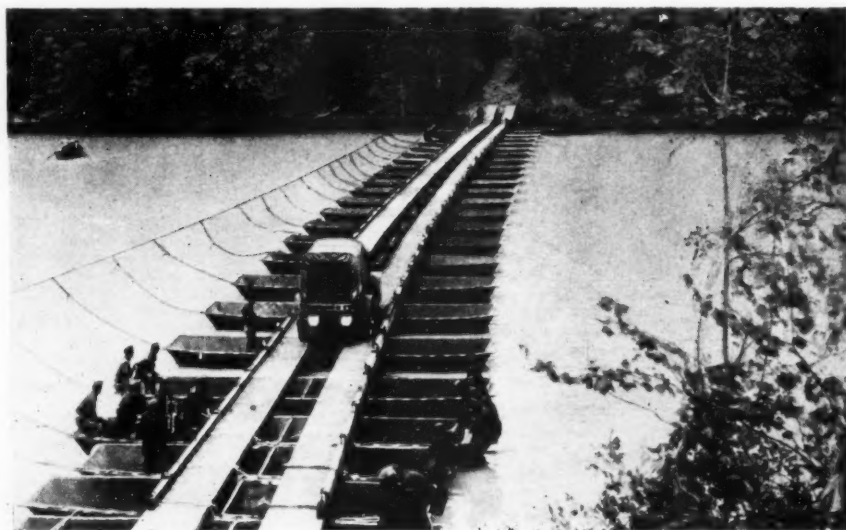
the markets of the country and, in normal times, of the world.

Douglas fir plywood is manufactured in two basic types, exterior and moisture-resistant. The exterior type is that made with a synthetic phenolic resin adhesive in hot plate presses to produce a strictly waterproof bond similar to Bakelite in its action. The moisture-resistant type—a more familiar material at present—must be suitable to resist casual wetting during construction, since it is commonly specified for sheathing and sub-flooring. Both types must meet standards promulgated by the National Bureau of Standards. Each type of plywood is made in several different “appearance” grades in order to provide a panel that will be suitable for every kind of service.

Uses of Douglas fir plywood fall into two general classifications, construction and industrial. For construction, fir plywood is revolutionizing the medium and low-cost house. Because of its structural and physical properties, demonstrated by tests at the U. S. Forest Products Laboratory and the

erection is a vital necessity. With the entry of the United States into the war, the pressure is increasing to have the plywood prefabricators of the country supply their “built-in-a-day” houses for the men who are re-arming the nation. Many such plywood houses, equal in structure, appearance, and durability to the more conventional, built-on-the-site house, already have been erected successfully in a score or more communities.

In high class concrete construction, it is now general practice to form the concrete surfaces against large smooth panels of plywood. Plywood boats in



U. S. Army, Corps of Engineers

Supplies, — motors and men — go over the river on a bridge built on boats and ramps manufactured from sheets of plywood

AMERICAN FORESTS

numbers estimated at more than 100,000, dot the waterways of the country. Outdoor plywood signboards and signs are in common use. In the industrial field, millions of feet of fir plywood are being used annually for furniture, toys, auto bodies, trailers, tobacco hogsheads, trunks and suitcases, packing boxes, all sorts of display work and a myriad of other purposes.

With such versatility of products and uses, the plywood industry in the Douglas fir region, starting from a single small plant built in 1905, expanded gradually until, in 1929, its production reached 358,000,000 square feet annually. This fell off to about 200,000,000 in 1932. Since that year, it has forged speedily ahead to reach one and one-half bil-

of electricity were needed to operate the mills in 1940. Mill payrolls and purchases naturally have had a favorable influence on the prosperity of the Pacific Northwest and more directly on the communities in which the mills are located.

The Douglas fir forests of the Northwest yield logs well suited for plywood manufacture. In normal logging operations, the trees will have a considerable range both as to size and quality. The largest and best logs, often five feet and sometimes even eight or nine feet in diameter, are known as "peelers" and find a ready market at the plywood mills. Smaller logs, down to about twenty-four inch diameter, also can be "peeled" economically. Moreover, the diversification



U. S. Army, Corps of Engineers

Plywood goes to war in high speed motorized assault boats, fabricated completely from quarter-inch plywood. Light as a feather, they can easily be nested for shipment

lion square feet in 1941. To attain this capacity, the industry has grown to twenty-eight mills, with two additional ones now nearing completion. These plants are all located west of the Cascade Mountains, in Washington and Oregon, with ready access to water and rail transportation and to log supplies. The number of employees in fir plywood mills and offices is estimated at nearly 8,000 and the annual payroll exceeds \$14,000,000.

Plywood manufacturing requires, in addition to the logs, large quantities of various materials and supplies. For example, about 17,000 tons of glues and adhesives were used last year to bind the sheets of veneer into rigid waterproof and water-resistant panels. An estimated eighty-one million kilowatt hours

of plywood grades, the use of lower grade veneers in the concealed inner plies of a panel, and the technique of patching knot-holes and similar defects in veneer, all combine to permit utilization of many second grade and even some third grade logs.

Despite the recent upswing in plywood, the total volume of logs used by the plywood industry comprises but a small fraction of the Douglas fir timber cut for sawmills, ties, poles and similar purposes. For example, in 1940, the utilization of Douglas fir for plywood constituted only about seven per cent of the total Douglas fir cut. This cut totals less than the amount of timber destroyed by forest fires each year in the Northwest. Even this proportionally small consumption, however, raises the question of how

long suitable plywood logs will be available. Douglas fir logs are produced by a rather large number of loggers and from numerous stands of timber, as it is harvested for lumber and other purposes. Practically all large timbering operations, and many of the smaller ones, produce some "peelers" and other suitable plywood logs, the percentage varying with forest conditions. As long as such industries continue in the Northwest, logs for plywood manufacturing undoubtedly will be available. During the past three years, the very success of the plywood industry has fostered noticeable expansion. However, in the future a more temperate expansion would seem desirable, first to prevent over-supply, chaotic market conditions, future plant failures and unemployment, and second, to assure that the demand for plywood logs will not overbalance the demand for all types of Douglas fir logs.

Two factors may influence the grades of logs which may be utilized for plywood in the future. One is that since 1938 there has been a large and significant increase in the demand for those grades of plywood which permit utilization of the lower grades of veneer. Such uses are chiefly for sheathing and sub-floors of buildings, and for a number of important industrial purposes. This, of course, means a wider utilization of logs below the "peeler" logs in quality, and makes

available for plywood a larger percent of all Douglas fir logs produced.

The other is that the plywood industry, through its Douglas Fir Plywood Association, has appropriated \$10,000 for a study of western hemlock as a potential plywood species. This study, begun in 1940, is being made by the U. S. Forest Products Laboratory, and although it is somewhat early to draw conclusions, there is reason to believe that this common West Coast species may become an important factor in the Northwest plywood industry. This would be in line with other technological developments, of which one of the most important and spectacular has been the successful adoption of waterproof synthetic resin adhesives for exterior plywood.

Considerable research and practical field demonstration of plywood's utility are carried on by the Douglas Fir Plywood Association. Numerous cooperative projects are in progress at universities and colleges throughout the country and the plywood mills themselves are active in research for improved products and techniques. Allied industries likewise, including those manufacturing adhesives, paints, finishes, and other products used with plywood, are making important contributions. The next decade, therefore, may witness additional revolutionary changes in plywood manufacture.



## 1942 EXPEDITIONS—TRAIL RIDERS OF THE WILDERNESS

The Trail Riders will ride again in 1942. In the belief that an opportunity for many to vacation briefly in the unspoiled wilderness is in the interest of national health and national morale during the all-out war effort, The American Forestry Association is organizing seven horseback trips and one canoe trip. To meet war conditions, the length of these wilderness trips has been reduced to ten or eleven days.

Expeditions for this summer are being planned as follows: In June, the Great Smoky Mountains, North Carolina and Tennessee, with headquarters at Asheville; in early July, Bob Marshall Wilderness, Flathead and Lewis and Clark National Forests, Montana, with headquarters at Missoula; canoe trip in the lake wilderness of the Superior National Forest, Minnesota, with headquarters at Ely; in mid-July, Sawtooth Wilderness, Sawtooth and Boise National Forests, Idaho, with headquarters at Sun Valley; Maroon Bells-Snowmass Wilderness, Holy Cross National Forest, Colorado, with headquarters at Glenwood Springs; in late July, Gila Wilderness, Gila National Forest, New Mexico, with headquarters at Silver City; and San Juan Wilderness, San Juan National Forest, with headquarters at Durango. This last will be a pioneering venture for Trail Riders, a first expedition to this magnificent wilderness in southwestern Colorado. In mid-August, there will be a trip into the Sequoia-Kern Wilderness, Sequoia National Park and Sequoia National Forest, California, with headquarters at Mineral King.

Definite dates and costs will be announced in the April issue of *AMERICAN FORESTS*.



# EDITORIAL



## EXAMPLE—SCHOOL OF MANKIND

THERE has never been a time in the history of America when conservation has been more imperative, or when it has been so widely broadcast. Yet does America know what conservation is and what it really means? Do our people know the true role it plays in the welfare of America both in times of war and in times of peace? Do they know the true relationship between conservation and famine? Do they ever visualize the dangers of the future because of the destructive exploitations of the past?

Late in the seventeenth century, Edmund Burke, that eminent writer and statesman, said: "Example is the school of mankind, as they will learn by no other."

Today the abandoned farms, deserted and dilapidated buildings, automobile graveyards, ghost towns, filth laden streams, deforested hills, and vanishing wildlife surely reveal a deplorable panorama of the examples we have followed.

Mankind has moved about the nation like so many men on a chess board in order to be in a better position to advance toward their goal of victory and personal gain regardless of the cost. Individuals, industry, and government all have played their part in the scourge that has devastated the land. One motto has been the guiding light: "Monkey see, monkey do."

If we look at a panoramic view of our cosmopolitan people who have exploited one resource after another, it reveals just two things: Local insufficiency for every community in America, and expansion of the total area of insufficiency.

The American people have boasted about being the greatest country in the world because we have managed to survive every social and economic eruption. We have lived in luxury while our education, culture and civilization have developed and advanced toward human happiness. We have taken on every challenge to oust crime, disease, drudgery, distance and ignorance from our body politic through scientific, religious and governmental agencies. Yet we have failed to meet physical and moral obligations of loyalty and duty toward security for the future because of relentless mismanagement of the very things that have made our progress possible—our natural resources.

Now we are again at war—another conflict in which the American citizens must share and learn to conserve as never before. We have no place to expand to secure additional resources—not now or after the emergency. We must augment and mould our own materials of warfare in addition to supplying

other countries now in need of similar materials. We must furnish food, clothing and shelter to our own millions and at the same time maintain a continuous supply of these stable materials to the starving and poverty stricken people of war torn Europe. We are, in fact, becoming the breadbasket of the world. But can we continue such a pace and still maintain an adequate supply of resources for our own needs and others if we depend upon the traditional examples of the past?

Man and all of his chemical and scientific research has not yet been able to create living and growing things—animal, plant and mineral life—but these things can be carefully guarded, wisely used and managed to insure their continuance in sufficient quantities to meet the demands of future generations.

What are we defending? Is it our democratic form of government with its freedom of speech and its religious worship and other privileges of liberty? Is it the defense of our shores from the invasion of a foreign enemy? Or is it the defense of our American pattern of human welfare which draws its sustenance and durability from living resources?

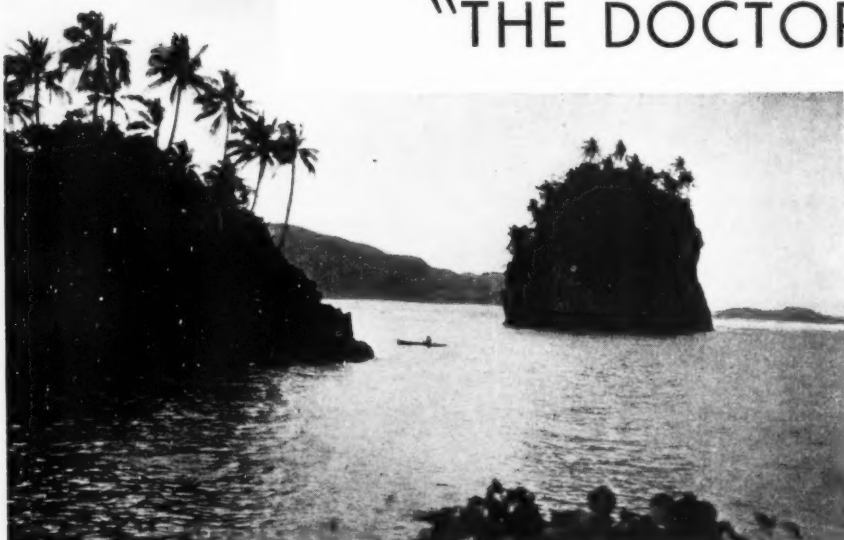
The future welfare of America does not depend entirely upon our democratic form of government, though there could be nothing better short of heaven. Our future welfare also depends upon the character and intelligence of our people concerning their natural resources. It is imperative that our people, as a whole, including the 26,000,000 school children, be taught the fundamental principles of conservation in their entirety in order that our raw materials may continue to supply the immediate and future needs of our people, come war or come peace.

The natural resources were what brought mankind to America. They made our nation possible. They have maintained it. They will be imperative in the future if humanity is to survive. No single group of conservationists can conserve our resources. The task calls upon all of them, old or young, to help change our example schools of destruction into example schools of conservation. Then all our people will begin to learn and to become conservation-minded for the benefit and welfare of humanity and posterity.

We cannot wait another 150 years to start. Now is the time to act.

*Myra E. Shoemaker*

# KALUAKAUKA— "THE DOCTOR'S PIT"



By  
JUDGE WOOD

Coast line in the Kukaiau country, Hawaii, near the scene of the tragedy

WHEN Edward Gurney escaped from the prison colony in Van Dieman's Land he managed, somehow, to reach the Kukaiau country, in Hawaii. He married a native girl and settled in a hut among the huge koa trees that grew, and still grow, on the upper slopes of Mauna Kea. It was easy to make a living in such a friendly climate. The ravines near the seashore abounded in wild bananas, coconuts, papaias. What money was needed he obtained by trapping and butchering wild bullocks, for whose meat and hides there was a moderate market.

Among the ancient lava beds on Mauna Kea there are numerous craters, large and small, in many of which grow wild grass, berries, or trees. Some of the smaller craters contain pools of water, where wild cattle come to drink. Such a crater, about 6,000 feet above sea level, in the great koa forest above Kukaiau, is Kaluakauka, "The Doctor's Pit," a glade of tragedy in a scene of beauty.

The bullock traps were usually situated near the watering places. It was not unusual for a stone wall to be built around a pool, enclosing a roughly circular area about sixty to one hundred feet in diameter. Several openings would be left through the wall for the wild cattle to enter. Pits, approximately five feet deep, were then dug under the wall openings and covered with wild raspberry or other brush. A layer of soil was spread over the brush, simu-



Dr. David Douglas  
Who died in Kaluakauka, "The Doctor's Pit"

lated bullock tracks made in the soil covering, and the traps were set. In such a trap one July day in 1834 the lifeless body of Dr. David Douglas, the great naturalist, was found. Americans know Dr. Douglas best for the Douglas fir, stately conifer of the Pacific Northwest, which bears his name. But to native Hawaiians he is better known because of "The Doctor's Pit" — Kalaukaua, which was named for him.

David Douglas was born at Old Scone, near Perth, Scotland, in the year George Washington died. After collecting botanical material in various places, he rounded Cape Horn, visited Juan Fernandez and Galapagos Islands, and put in at Fort Vancouver in

the autumn of 1823. His objective was the Columbia River, where he was to find the Douglas fir, collect seeds and plants, and make friends with the Chinook and Clatsop Indians.

For some years following, Dr. Douglas collected botanical specimens in places that were then remote indeed. His labors carried him across North America from the Columbia River to Hudson's Bay; then to California and south to Rio de Janeiro. There was probably none more skilled in traveling among the mountains, craters, or jungles. For some strange reason he possessed but one fear, of which he told Alfred Robinson in Monterey. He was afraid of cattle.

He went to Hawaii in 1833. The journey along the trail through the koa forest above Laupahoe, in the Kukaiau country, past the hut of Edward Gurney, the prisoner from Van Dieman's Land, was made in July, 1834. It was not his first experience in this area. He climbed Mauna Kea five months earlier and knew well the nature of its cratered foothills, knew its tree ferns, its lehua forests, and its varying climate from tropical sea level to the snows of its 13,825-foot summit.

On July 11, he spent the night at the hut of Edward Gurney. Hours later David Douglas was dead. His body was found by a native in a bullock pit, or trap, into which one of the wild cattle had previously fallen. Today the scene of this great tragedy is known as Kalaukaua, "The Doctor's Pit."

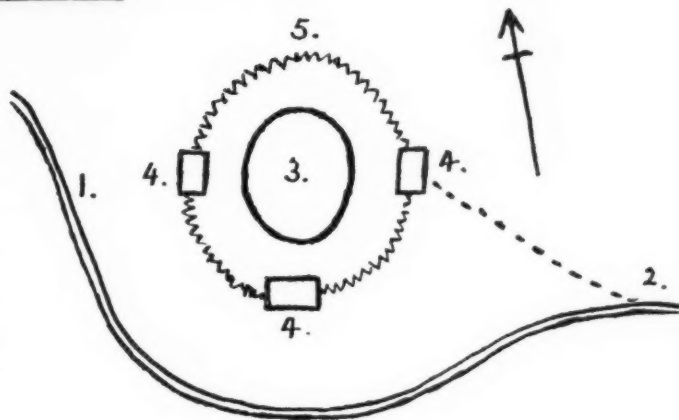
An old letter, written from Hilo on July 15, 1834, by Joseph Goodrich and John Diell, to Richard Carlton, British Consul for the Sandwich Islands, reveals some of the circumstances surrounding the tragedy.

"Our hearts almost fail us when we undertake the melancholy duty . . . to communicate the painful intelligence of the death of our friend, Dr. Douglas, and such particulars as we have been able to gather respecting this distressing providence," the letter read. "The tidings reached us when we were every moment awaiting his arrival, and expecting to greet him with a cordial welcome. As Mr. Diell was standing in the door of Mr. Goodrich's (Continuing on page 132)



Koa trees frame this stone monument to David Douglas at the "Doctor's Pit" today

An old sketch of the scene of the tragedy. (1) Path leading from the hut of Edward Gurney; (2) place where Dr. Douglas left his bundle and dog, the tracks leading to the pit in which his body was found; (3) pool of water; (4) the three pits; (5) fence which surrounds the pool and compels the wild cattle to pass over the pits



# THE FOREST OF THE PILGRIMS

By WILLIAM GOULD VINAL

CONSCIENTIOUS school teachers are abetting false notions when they cause school boys to grow up believing that

"The breaking waves dashed high  
On a stern and rock-bound coast,"

which was written by an English lady who never saw New England. There is no rock-bound coast on Cape Cod, the nearest rock-ledges being at Scituate, some twenty miles north of Plymouth.

Felicia Hemans went on to say

"And the woods against a stormy sky  
Their giant branches tossed."

The purpose of this article is not to worship Plymouth Rock less, but to evaluate the Pilgrim woods higher. Even if the Plymouth coast is not rock-bound, stern conditions awaited the Pilgrim band. Whereas the rock was but a stepping stone to shore, the forest was to furnish material for the seven crude huts that were to shelter them from the winter's cold. Without timbers for "a large square house with a flat roof" (the fort on Burial Hill), which served also as a meeting house, there would have been no place for temporal or spiritual refuge. Without the forest, the fate of the little colony, which hung trembling in the

balance, would have changed the course of history and maybe the destiny of the continent.

The present dwellers of America are suffering from a pathological lapse of conception of what the Old Colony woods were like, when the Pilgrims first "set their feet upon the firm and stable earth." The worship of Plymouth Rock, which still possesses visiting patriots, has left the Pilgrim forest to be gypsomothed and to yearly burnings, until it has become impossible for school teachers and even school textbooks to fix a true picture in mind.

As difficult as it has been for zealous historians to point the prow of the Mayflower to Plymouth Rock or to dig up a hypothetical lake to furnish fresh water for the first Monday washing, it is convincing to quote about the trees from the Pilgrim journals and letters which were gathered into a publication now known as *Mourt's Relation* (1622). To quote: "And upon the eleventh of November we came to anchor in the bay, which is a good harbor (Provincetown) . . . compassed about to the very sea with oaks, pines, juniper, sassafras, and other sweet wood." (Pilgrim Lake, Provincetown, was undoubtedly an arm of Provincetown Harbor at that time.)

It is significant that the Pilgrims had no sooner subscribed their name to the first compact of human liberty by the people and for the people, than "the same day, so soon as we could, we set ashore fifteen or

Quite different from the "oaks, pines, juniper, sassafras and other sweet wood" which greeted the Pilgrims is the bleak waste which now surrounds their first pond near Provincetown





sixteen men, well armed, with some to fetch wood, for we had none left." They "loaded their boat with juniper (red cedar), which smelled very sweet and strong, and of which we burnt the most part of the time we lay there." To the list of trees already mentioned, they added "birch, holly, vines, some ash, walnut; the wood for the most part open and without underwood, fit either to go or ride in."

In the first expedition, when night came upon them, "some kindled a fire, and others fetched wood, and there held our rendez-vous." They followed Indians into the woods by the "trace of their footings." In some places, the "boughs and bushes . . . tore our very armor in pieces." They found many "walnut trees full of nuts." "Our people did make things as fitting as they could, and time would, in seeking out wood, and helving of tools, and sawing of timber to build a new shallop."

After five weeks at Provincetown, the Mayflower came to Plymouth harbor "compassed with a goodly land; and in the bay two fine islands (Clark and



Pilgrims trod footpaths such as this — but white pine instead of pitch pine shaded their way

MARCH, 1942



On this island near Plymouth some idea of the Plymouth forest in its original state may be found

Saquish) uninhabited, wherein are nothing but wood, oaks, pines, walnut, beech, sassafras, vines, and other trees which we know not." According to their own records, the Pilgrim forest was considerably different from the battle-scarred scrub oak plains and pine barrens of today.

It was recently the writer's privilege to visit an island which probably comes the nearest of local woods to portraying the Pilgrim forest in its original state. James Thacher in his *History of the Town of Plymouth* (1832) states that this island "formerly furnished a large supply of masts." The oldest tree inhabitants of the island today are probably not over 150 years old. They have attained a diameter of approximately eighteen inches, and possibly are seventy feet in height. This stand of trees is approaching the climax forest stage, which means that it exhibits the final type of tree that would grow if unhindered by man. Being on an island, this forest has not been disturbed by fire or ax for several generations. It is, therefore, the best existing gauge for judging the climax forest which the Pilgrims probably found. Tree for tree, it tallies in a remarkable way with the trees described in *Mourt's Relations*. (Continuing on page 143)

## PORT ORFORD CEDAR

*Chamaecyparis lawsoniana*, (Murray) Parlature

BY G. H. COLLINGWOOD

A NARROW strip of coast range, from the vicinity of Coos Bay in southwestern Oregon to the Mad River, south of Eureka in northwestern California, and extending ten to forty miles back from the sea, marks the limited range of Port Orford cedar. Here temperatures are moderate, with heavy precipitation, high humidity, and many cloudy days.

This largest of three North American members of the genus *Chamaecyparis* has three other relatives in Japan. Heights of eighty to 175 feet, and occasionally of 200 feet, with diameters of twelve feet, belie the Greek word "*chamai*" meaning "on the ground," which combined with "*kyparissos*" or "cypress" makes *Chamaecyparis*. The specific name, *lawsoniana*, honors Sir Charles Lawson, a Scottish economist in whose nursery were raised the first seedlings from seeds which William Murray gathered in the cañon of the Sacramento River in 1854. The larger stands of timber were reported in 1855 from the Coos Bay area.

Diameters of three to seven feet are probably attained in 300 to 350 years, while the largest trees may be 600 years old. Best growth is attained on moist hillsides or canyon bottoms, but the dry, sandy ridges on the western slopes of the coast ranges support trees up to 5,000 feet above sea level. A narrow crown terminating in a nodding spirelike head, with its main portion comprised of horizontal or somewhat pendulous branches with fine, flattened, lacy sprays, takes up a quarter to a third of the full height of forest grown trees. Heavy buttresses mark the base of the larger trees but these rapidly contract to form round, full stems. The trunks of forest trees may be clear of branches for 150 feet but the drooping branches of open-grown trees extend to the ground.

Bright green scale-like leaves about one-sixteenth of an inch long pressed flat, one overlapping another, thickly clothe the branchlets. Each leaf becomes nearly a quarter of an inch long and more loosely spreading near the ends of the leading shoots. Each leaf is glandular on the back, with white stomatiferous lines below. They turn bright red-brown and fall during the third year.

The pollen-bearing catkins of Port Orford cedar are bright red and appear in early spring. Small reddish brown ovulate cones of about seven scales appear at the same time. By early autumn these mature as clear, dark russet brown, berry-like cones about one-third of an inch in diameter. Each cone is composed of three pairs of shield-shaped scales overlapping one another to form a series of x-like markings. The erect cones release their two to four small wing-margined seeds late in September or early October.

After about twelve years trees begin bearing seed crops during alternate years and continue into advanced age. The seeds have a high percentage of germination but must encounter suitable conditions soon after their release. They are seldom carried far from the parent tree. Seedlings can grow in shade or full sunlight, and so take over available open sites,



Ray I. Kimmey

Fine lacy sprays droop from the short conical crown of tall forest-grown Port Orford Cedar trees

regardless of whether they are burned over. Exceedingly dense cover suppresses the seedlings and eventually kills them.

The reddish-brown, fibrous bark may become six to ten inches thick, and is divided into broad ridges marked by loose, thin shreds and separated by deep irregular longitudinal fissures.

The even grained wood of Port Orford cedar is moderately soft, durable, and weighs about twenty-nine pounds to the cubic foot when air dry. Its nearly white sapwood is scarcely distinguishable from the yellowish white heartwood. It is easily worked, capable of a high polish, holds paint well, and is easy to season. Because of its resistance to the action of acids, the most important use is for storage battery separators.

Other commercial uses include Venetian blind slats, millwork, deck and boat construction, plywood for aircraft, railway ties, mine timbers, flooring, broom handles and blocks for sulphur matches. An abundance of resin gives an aromatic ginger-like odor which causes the wood to be sought for mothproof box and closet linings. An oil is also distilled from the wood for use in soap.

In 1933, the stand of Port Orford cedar over sixteen inches in diameter was estimated at 1,450,000,000 board feet, of which nearly 1,200,000,000 is in an area of less than 400 square miles in southwestern Oregon. Available statistics do not distinguish the lumber production of Port Orford cedar from other "cedar" lumber produced in Oregon and California, but the annual cut of 1940 exceeded 54,000,000 board feet. Of this amount some 16,000,000 board feet were exported in 1936, and 5,400,000 board feet in 1938. The bulk of the exports were logs to Japan, with smaller quantities to Italy and Germany.

Limited pure stands of Port Orford cedar occur in the vicinity of Coos Bay, Oregon. It usually constitutes less than one-fourth of the stand, being associated with Sitka spruce, Western red cedar, Douglas fir, Western hemlock and Lowland white fir. In its southern range this tree invades areas occupied by redwood, red fir, California laurel and occasionally ponderosa pine and sugar pine. Stands of 20,000 board feet to the acre are common, with occasional acres measuring 100,000 board feet.

The thick bark protects mature trees—but heavy losses result when fire runs through young growth. It has few insect enemies and the wood is highly resistant to decay. Fire-killed trees have proved sound and usable after standing forty years or more.

In the ornamental trade, this tree is known as Lawson Cypress. Since its introduction, shortly after 1854, some seventy varieties and forms have been planted in Northern Europe, New Zealand, and America, and it is hardy as far north as Massachusetts, though sensitive to sudden temperature and humidity changes, and does not thrive in a dry climate.

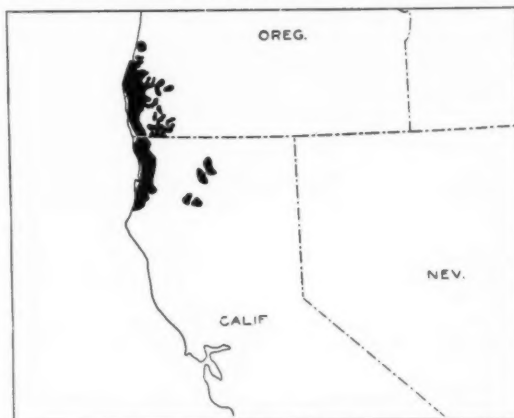


Devereux Butcher

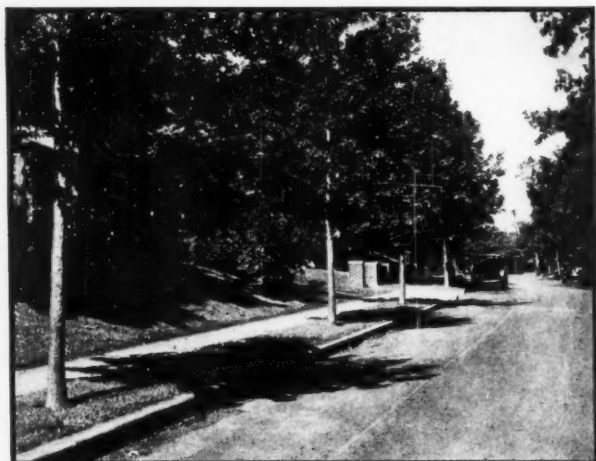
Three pairs of shield-shaped scales combine to form the small cones which stand erect among the feathery sprays of scale-like foliage



The reddish-brown fibrous bark is six to ten inches thick



Natural Range of Port Orford Cedar



A fine row of sweet gums really ornaments a city street

SWEET Gum, *Liquidambar styraciflua*, with its star-shaped leaves, splendid fall coloration, and deep corky bark, is one of our most beautiful trees. A native of woodlands from Connecticut to Florida and Texas, it is being planted more and more extensively along city streets and on landscaped property throughout the East.

No highly destructive fungus parasite formerly was known to attack it. Recent investigations in New Jersey, however, have revealed that this highly prized tree is subject to a new disease of bark and sapwood capable of completely destroying large specimens in a relatively short time. Infected trees have been found in northern and central New Jersey and on Staten Island, New York. It probably occurs in other areas of the Northeastern United States, though lack of time has prevented a complete survey of these areas.

The most striking symptom of the disease, readily visible even at some distance, is the profuse bleeding of the bark, usually at the soil line or a few feet above, but observed occasionally as high as twenty feet on the main trunk and on the lower branches. The exudation looks like heavy motor oil poured over the bark. It may originate in some artificially induced injury, but as a rule, develops from points where no external injuries are visible. As many as twelve distinctly separate areas have been found bleeding on a single trunk at one time, but usually only one or two extensively bleeding areas are found on each trunk.

Infected trees may exhibit undernourished foliage and more or less extensive dying-back of terminal branches by the

time profuse bleeding is visible on the trunk. A few trees have been noticed which, despite some bleeding on the lower trunk, maintained normal foliage and otherwise appeared in vigorous condition.

The bark bleeding is not always an indication of disease, inasmuch as sweet gums are known to bleed when they are subjected to some unfavorable treatment. The condition of the inner bark and sapwood beneath the oozing areas is a more reliable symptom. The inner bark of diseased trees is dark reddish brown with an occasional pocket containing a white crystalline solid. In advanced stages of infection, the sapwood also exhibits a dark reddish brown discoloration to a depth of three or four rings. The discoloration is rarely found in the heartwood. The author has named the disease "Bleeding Necrosis," because of the bark-bleeding symptom and the killing of the tissues beneath.

The upper part of the tree may die slowly and progressively throughout the season, or the entire

top may die within a relatively short time. The leaves of one tree, for example, emerged normally in the spring of 1941

## YOUR SHADE TREES

### A NEW DISEASE OF SWEET GUM

By P. P. PIRONE



The new disease — Bleeding Necrosis — in its late stage, showing considerable die-back of the branches



but wilted completely within a ten-day period in early June. The entire top was dead and completely dry two weeks later.

Discoloration and bleeding appear to be confined to the above-ground parts of the tree. An examination of the larger roots of several trees revealed that infection by the parasite did not penetrate to the parts below-ground, at least in the early stages of the disease.

Bleeding necrosis has been found on trees varying in age from eight to seventy-five years. Most of those observed were growing along paved streets or on land-scaped property. At Moorestown, N. J., diseased trees were discovered at the edge of a wooded area along a secondary highway. In many cases some unfavorable environmental factor, such as proximity to pavements, changes in grade, or drainage ditches, may have been contributing factors. On the other hand, diseased trees have been found in situations devoid of obvious detrimental factors.

Preliminary studies revealed that the fungus responsible for bleeding necrosis

bright-orange spore tendrils, one-sixteenth of an inch or less in length, ooze from the black, partly submerged bodies. These have not been found in great abundance on naturally infected bark but develop profusely on the surface of artificially inoculated stems in the laboratory.

The present investigations have not revealed how the fungus is disseminated from diseased to healthy trees. Mr. E. A. Rundlett, arboriculturist of the New York City Park Department, has collected two species of insects in the bark and cambium of diseased trees. These were identified as *Silvanus bidentatus* Fab., and the American plum borer, *Euzophera semifuneralis* Wilk. Whether these pests are vectors of the parasite has yet to be determined.



The most positive symptom is the discolored sapwood beneath the bleeding bark

Because the initial outbreak of the disease occurred so recently, no control measures have yet been developed. All trees known to be affected in the Staten Island area are being eradicated by the New York Park Department, as a means of preventing further spread of the fungus. Until more is known about the disease, such a practice is probably the most sensible approach. Several affected trees in New Jersey have been heavily fertilized to determine the effect of such a treatment on the progress of the disease, but sufficient time has not yet elapsed to warrant any conclusions.

The author would appreciate receiving chips of bark and sapwood from trees showing the bleeding symptom.

## THE QUERY CORNER

Q.—Please advise me if a blight-resistant strain of our native chestnut tree has yet been developed. If not, what are the prospects for the return of the native chestnut?—Justice Frank T. Lloyd, Merchantville, N. J.

A.—The U. S. Department of Agriculture continues to test many selections of native chestnuts for blight resistance, but thus far none has proved to be completely resistant. Some sprouts or trees may grow for a number of years but they finally succumb to blight. Although no one can forecast whether the native chestnut will return to its former important place, the prospects do not look too promising.

Q.—I have two large blue spruce trees which at times during summer and fall develop little patches of pink burrs on their foliage. Also, needles of main branches sometimes turn yellow after which they dry up and finally drop off, leaving the branch dead and barren. These trees are very precious to me and I would appreciate any advice you could give me.—Aletta A. Berry, Floral Park, Long Island, New York.

A.—The pink burrs you note are probably galls produced by feeding and irritation of the blue spruce gall aphid, *Adelges cooleyi*. The adult female overwinters on the bark near the twig terminals and deposits eggs in that vicinity in the spring. To kill overwintering females, spray with one-half pint of nicotine sulfate and three pounds of powdered soap in fifty gallons of water before the buds open in the spring. Cutting out and burning the pink galls also helps to reduce later infestations.

Yellowing of needles and defoliation may be due to drought, or to a stem disease known as *Cytospora* canker. Only direct examination of diseased material will permit a positive diagnosis.

Q.—I have on my lawn a tree either sugar maple or Norway maple. The leaves begin to drop about June 15th or July 1st, which appears too early. Can you suggest what could be the matter?—George U. Weiser, York, Pennsylvania.

A.—Your tree is probably a sugar maple since this species is particularly susceptible to leaf scorch, a non-parasitic disease. During periods of high temperatures and drying winds, the roots are unable to supply water in quantities sufficient to compensate for that lost through the leaves. As a result, the leaves wilt, turn brown and drop. Any practice that increases root development and improves the tree generally will help to reduce leaf scorch. The application of chemical fertilizers, especially those containing large quantities of potash, is suggested.



The most striking external symptom is profuse bark bleeding

is *Dothiorella berengeriana* Sacc., or a closely related species. For practical purposes, however, the exact name of the organism is not essential.

Tiny fruiting structures of the causal fungus often appear on diseased bark. These are more readily detected when

## KALUAKAUKA—"THE DOCTOR'S PIT"

(Continued from page 125)

house yesterday morning about eight o'clock, a native came up, and with an expression of countenance which faithfully told he was the bearer of sad tidings, inquired for Mr. Goodrich. On seeing him, the native communicated the dreadful intelligence that the body of Dr. Douglas had been found in the mountains, in a pit excavated for the purpose of taking wild cattle.

"As we proceeded to the beach, whither his body had been conveyed in a canoe . . . the native gave for substance the following relation: On the evening of the 13th of July, the natives who brought the body down from the mountain came to his house in Laupahoe and employed him to bring it to this place in his canoe. The particulars he learned from them were that Dr. Douglas left Kohala Point last week, with a foreigner, an Englishman, as guide. They proceeded to cross Mauna Kea on the north side. On the 12th he dismissed his guide, who cautioned him on parting to be very careful lest he should fall into the pits excavated, describing them as near the place where the cattle resorted to drink.

"These natives related that at some fatal moment Dr. Douglas had tumbled into one of the pits, in which a wild bullock had previously fallen. He was there found dead by these natives, who were in pursuit of wild cattle.

"They went in pursuit of the guide, who returned and shot the beast in the hole, took out the corpse, and hired the natives at the price of four bullocks, which he killed immediately, to convey the body to the seashore. He himself accompanied them, and procured the native who related the affair, to bring the corpse to this place, promising to come himself imme-

diately. He said he would bring the compass, watch (which was somewhat broken but still going), some money found in Dr. Douglas' pocket, and the little dog, faithful companion of our departed friend.

"Our first care was to have the remains conveyed to some suitable place, where we could take proper care of them. Mr. Dible's family being absent, it was determined to carry the body to his house. We will not attempt to describe the agony of feeling we experienced at that moment. Can it be! we each exclaimed. But the answer was faithfully contained in the familiar articles of dress, in the features, and in the noble person before us.

"The hat was missing. On washing the body we found there were ten to twelve gashes on the head, a long one over the left eye, another, rather deep, just above the left temple, and a deep one behind the right ear. There were bruises on the body and legs.

"Our first thought was to bury him in Mr. Goodrich's premises; but after we had selected the spot and commenced clearing away the ground, doubts were suggested by a foreigner who was assisting us, and who has for some time been engaged in taking wild cattle, whether the wounds on the head could have been inflicted by a bullock. Mr. Goodrich said similar doubts had arisen in his mind.

"The matter did not seem clear. These difficulties occurred to our minds, and we deemed it due the friends of Dr. Douglas, and the public, whom he had served so well, that an examination should be made by medical men. The only way this could be done was by preserving the body and sending it to Oahu. Accordingly we had the body filled with salt and enclosed in a

box of brine. . . .

"We have employed two foreigners to go to the place where the body was received on the sea shore, with directions to find the persons who discovered it, go with them to the pit, make as full inquiries as possible, and report to us immediately.

"As far as we can ascertain, the guide (Edward Gurney) is an Englishman, a convict from Botany Bay, Van Dieman's Land, who left a vessel at these islands some years ago. He has a wife and one child. . . . He states on the 12th, about ten minutes before six in the morning, Dr. Douglas arrived at his house, and wished him to point out the road. After taking breakfast Gurney accompanied Dr. Douglas about three quarters of a mile, and warned him of the traps. Dr. Douglas then dismissed him, after expressing a wish to reach Hilo by evening, thinking he could find the way by himself.

"He then parted from Dr. Douglas and went back to skin some bullocks he had previously killed. At eleven o'clock the two native boys came in pursuit of him, and said the European was dead; they had found him in a pit where there was a bullock. He obtained a musket, ball, and hide and went to the pit, where he shot the animal and extricated the body. The bundle and small dog of Dr. Douglas were found a short distance away.

"It is no common death which has thus called our tears and sympathies."

From a letter written by Richard Charlton, from Honolulu, to James Bandinel, Esq., on August 6, 1834: ". . . On the 9th ultimo I received the accompanying letter from Messrs. Diell and Goodrich. On the 3rd instant the body was brought here in an American vessel. I

(Continuing on page 144)

## TREES AND THEIR USES—No. 63—PORT ORFORD CEDAR

**PORT ORFORD CEDAR.**  
A LARGE TREE OCCASIONALLY GROWING AS TALL AS 200 FEET, IS FOUND IN THE SOUTHWESTERN CORNER OF OREGON AND IN NORTHWESTERN CALIFORNIA WHERE THE TEMPERATURE IS MODERATE AND WHERE THERE IS MUCH RAIN.  
THE TRUNK MAY ACQUIRE A THICKNESS OF FROM THREE TO SEVEN FEET, BE CLEAR OF BRANCHES FOR 150 FEET, AND HAVE BARK AS THICK AS TEN INCHES.  
ITS WOOD IS EASILY WORKED, IS EASY TO SEASON AND, BECAUSE OF ITS RESISTANCE TO THE ACTION OF ACIDS, IS VALUED FOR STORAGE BATTERY SEPARATORS.  
OTHER USES FOR ITS WOOD INCLUDE VENETIAN BLIND SLATS, BOAT CONSTRUCTION AND FOR PLYWOOD IN AIRCRAFT BUILDING.

RESIN WITH A GINGER-LIKE ODOR, CAUSES THE WOOD TO BE MUCH SOUGHT AFTER FOR MOTH PROOF BOXES AND CLOSETS.  
AN OIL IS ALSO DISTILLED FROM THE WOOD FOR USE IN SOAP AND MEDICINE.  
CONSIDERABLE QUANTITIES OF PORT ORFORD CEDAR WERE EXPORTED IN THE YEARS BEFORE THE UNITED STATES MADE ITS ENTRY INTO THE WAR. MOST OF THIS WENT TO JAPAN, GERMANY AND ITALY.  
PORT ORFORD CEDAR, WHEN USED AS AN ORNAMENTAL TREE, IS KNOWN AS LAWSON CYPRRESS AFTER GIR CHARLES LAWSON, A SCOTTISH ECONOMIST, IN WHOSE NURSERY WERE RAISED THE FIRST SEEDLINGS.

HON. UNCLE SAM SELL VERY GOOD WOOD. WE BUY, PLEASE!

-FADER-



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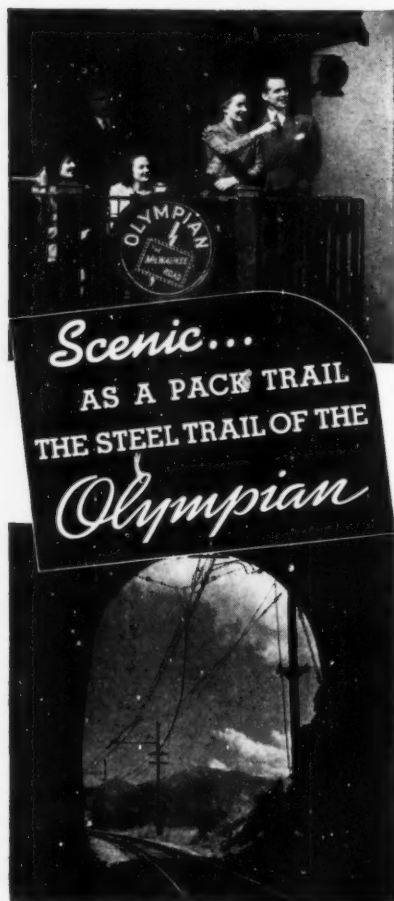
making and other industrial fields, forest products are more in *demand*, more valuable for Defense. Our American Tree Farms can meet the demand for timber and forest-products needed in Peace and in War. Timber is a Crop, and we are Growing Trees. The Men of the Forest Industries are out to keep the Flag of Free Enterprise Flying!



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## REGULATION URGENT, SAYS FOREST SERVICE

WITH war demands for timber increasing the drain on forests in many sections of the country, there is more need than ever for nation-wide public regulation of cutting practices on privately owned forest lands, said Earle H. Clapp, acting chief of the U. S. Forest Service, in his annual report released February 10.

"The time for temporizing, for depending entirely or even largely on cooperation, on the initiative of private owners, or on chance, has passed," he declared. "There is need now for assurances that will stop those private forest land practices that have depleted and deteriorated a vital and renewable resource nationally as well as regionally. One assurance is nation-wide public regulation; another is public ownership and management of much more forest land."

Many farsighted leaders among forest owners have adopted better forest practices, Mr. Clapp asserted. "These practices afford additional proof that destructive exploitation of the forest resource is unnecessary even in war. But most private owners still cling to the destructive cutting that for decades has helped in varying degree to create rural slum conditions within areas that include nearly one-quarter of the land surface of the United States."

Defense demands have led to greatly increased cutting in many forest regions, he said. "This is depleting privately owned virgin forests more rapidly. It is eating more rapidly into privately owned second growth forests. Mostly destructive cutting, it is deteriorating the privately owned forest resource. Therefore, regulation is needed now more than ever to protect thrifty second growth in the South, the Northeast, and elsewhere from deterioration. It is needed to assure protection from destructive cutting practices to virgin redwood in California, and the remnants of old-growth pine and hardwoods in the Lake States."

According to the report, the national forests, which are under the administration of the Forest Service, totalled 177,497,531 acres on June 30, 1941. In this vast domain, extending into forty-two states, were 24,300 miles of forest highway, 123,500 miles of development roads, and 163,800 miles of foot and horse trails. From it during the year was cut timber valued at nearly \$5,000,000. Approximately 150,000 acres were planted to young trees, bringing the total area of plantations on national forests to more than 1,000,000 acres. On the federal forest domain grazed 4,958,684 sheep, 1,218,874 cattle, 77,011 horses, 17,749 swine, and 9,616 goats. On it also grazed 2,000,000 big game animals.

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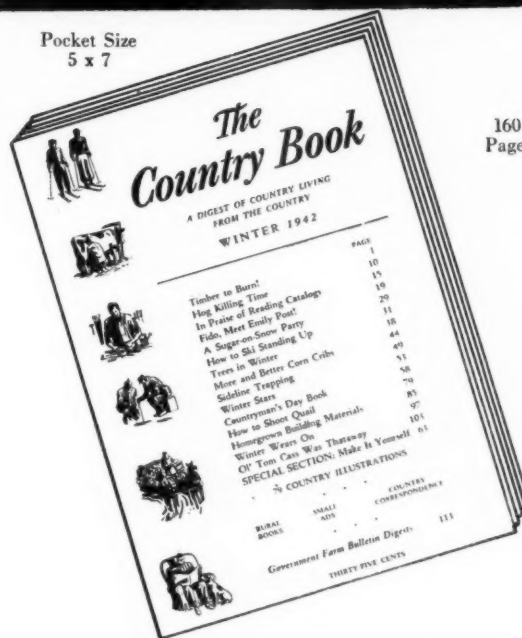
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## Selected Reading References on Conservation

A COMPREHENSIVE list of reading references forms an appendix to the book — AMERICAN CONSERVATION — In Picture and In Story.

This list has been reprinted as a separate of twelve pages, to meet the many calls for reference material. Copies may be obtained for 10c in coin or stamps.

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## STATES OPPOSE FEDERAL REGULATION

ANY form of federal control or regulation of private or state owned timberlands in Indiana and North Carolina was vigorously opposed in late January and early February by conservation agencies of the two states.

In Indiana, resolutions by the State Conservation Commission and the State Conservation Advisory Committee, the latter representing more than a thousand active conservation clubs in Indiana, opposed federal control of the state's timberlands with the declaration that the agencies will foster with every means at their disposal "the existing forestry activities in the State of Indiana, and will strive to put into operation, through the State Division of Forestry and cooperating agencies, a complete and adequate program of forestry which will obviate for all time the necessity of any form of forest regulation by the federal government."

Adequate and necessary state legislation to improve and safeguard the forests and timberlands of the state will be drafted and sponsored by the Commission, with the support of the Committee, it was stated. Furthermore, should at any future date a critical forest situation impend, the Commission declared, such regulatory measures as may be necessary will be initiated and administered by the state. The Conservation Advisory Committee also favored state control, rather than federal, stating: "State control of forests and forest practices will more adequately coordinate with other conservation activities in the State of Indiana to the improvement of timber and timberlands, stream improvement, and in general a fuller development of the natural resources of the state."

In North Carolina, the State Board of Conservation and Development, meeting in regular session on January 21, viewed "with disfavor the attempts on the part of certain groups in the federal government to seize upon the forest problem as an opportunity to impose federal regulations on the states."

The Board declared that it did not recognize the existence of a critical forest situation in North Carolina and believes that the present progress of forestry, if further stimulated by expanded activities on the part of the several states with co-operation by the federal government, will prevent the development of a critical situation. In any event, it declared, the state should assume full responsibility and be permitted to exercise this responsibility for the solution of its forest problem. Imposition of federal regulations would be acceptable only as a last resort, it was made clear.

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### THE AMERICAN FORESTRY ASSOCIATION

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## CONSERVATION IN CONGRESS

CALLING attention to the lurking danger to forests from sabotage and incendiary bombing and particularly to the lack of forest fire fighting personnel available for the coming fire season, a letter recently sent members of Congress by The American Forestry Association resulted in an amendment to the Second War Powers Bill, S. 2208, which would enable the Civilian Conservation Corps to protect war industries and natural resources from the hazards of forest fires.

### CCC and Forest Protection

Introduced by Senator McNary of Oregon, the amendment passed the Senate January 28, empowering the President to direct the administrator of the Federal Security Agency to "assign the man-power of the Civilian Conservation Corps to the extent necessary to protect the munitions, aircraft, and other war industries, municipal water supply, power and other utilities, and to protect resources subject to the hazards of forest fires." Amended slightly by the House Judiciary Committee, making effective forest fire protection the year around, and affording CCC protection of war industries "for hazards other than forest fires," the measure will probably be passed by the House and signed by the President prior to March 1.

To what extent this encouraging Congressional action may stem the tide of abolition of the CCC is not known. However, the amendment gives the organization a specific war duty to perform and it is believed that this may help to preserve the organization which has been most helpful to forest conservation during recent years. As a result bills like S. 2209, introduced by Senator Bilbo of Mississippi, on January 16, providing for transfer of equipment, facilities, motor vehicles, etc., of the CCC and the N.Y.A. to the War Department, will probably not receive serious consideration by Congress at this time.

Meanwhile, Federal Security Administrator Paul V. McNutt has ordered closed 200 of the remaining 800 CCC camps by the middle of March. He instructed all camps to concentrate efforts on (1) work on military reservations or military areas for the U. S. Army and (2) protection and development of natural resources essential to the war effort. Adding that camps to be eliminated could not contribute to the war effort, CCC Director James J. McEntee said that protection of resources for war needs will be done by enrollees located in forests on the public domain and other lands with natural resources under supervision of the Depart-

ment of Agriculture and the Department of the Interior. This work will include protection of forest areas from fires of natural origin as well as those caused by sabotage or incendiary bombs. The CCC has been active for more than a year in the development of military reservations. As of December first, a total of 10,000 CCC enrollees were working on military projects and by February first this number had reached 16,000.

### West Pools Protection Resources

Authorization to use the CCC for protection of war industries and natural resources will be particularly encouraging to the Pacific Coast States where inability to find men suitable for forest protection work has become increasingly difficult. Indication that those responsible for forest fire protection in this region are alert to imminent dangers is found in the plan now being worked out to pool resources of fire protection agencies in all West Coast states that outbreaks from any source may be controlled during the coming fire season. Committees are being formed in Oregon and Washington and the California legislature has appropriated \$4,000,000 to the State Division of Forestry for additional protection during the next eighteen months, under the "State Fire Disaster Plan."

Contained in the First Deficiency Appropriation Bill, H. R. 6548, which passed the House on February 9, is a \$57,217,271 item for "emergency fire fighting, pumping units, hose equipment for training and outfitting auxiliary corps, etc." This is part of the \$100,000,000 appropriation for civilian defense, over which there has recently been considerable controversy. What share, if any, of the \$57,000,000 will be used for emergency forest fire fighting has not yet been determined.

Deficiency items of \$2,050,000 for fighting forest fires on national forests during the 1942 fiscal year, and \$18,000 for the administration of the revested Oregon and California Railroad and reconveyed Coos Bay Wagon Grant Lands, are also contained in H. R. 6548.

### Resource Planning

The Independent Offices Appropriation bill for the 1943 fiscal year, H. R. 6430, as passed by the House January 22, contains a \$1,108,845 item for operation of the National Resources Planning Board, during the 1943 fiscal year; this is a \$7,500 increase over funds available during the current year. \$400,000 of the total amount is for national defense activities.

(Continuing on page 141)

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## CONSERVATION CALENDAR

Important Bills in Congress with  
Action January 16 to February  
17, 1942

### BILL VETOED

S. 2152—DOWNEY—To provide for the planting of guayule and other rubber-bearing plants in order to make available a domestic source of crude rubber for emergency and defense uses. Passed Senate January 15, 1942. Passed House February 5, 1942. Vetoed by the President February 17, 1942.

### APPROPRIATIONS

H. R. 6548—CANNON—First Deficiency Appropriation for the fiscal year ending June 30, 1942. Passed House February 9, 1942. Reported with an amendment (No. 1086) by the Senate Committee on Appropriations February 13, 1942.

### GOVERNMENTAL FUNCTIONS

S. Res. 219—DOWNEY—To provide for an investigation of rubber supplies and production. Introduced January 16, 1942. Referred to the Committee on Military Affairs.

S. 2208—VAN NUYS (H. R. 6403—SUMNERS)—To further expedite the prosecution of the war. Amended and passed by the Senate January 28, 1942. Reported with an amendment (No. 1765) by the House Committee on the Judiciary February 9, 1942.

S. 2226—LEE, ET AL (H. R. 6464—ELLIS)—To provide for the improvement of navigation, control of floods, and promotion of the national defense through development and conservation of the resources of the drainage basins of the Arkansas, White, Ouachita, and St. Francis Rivers, etc. Introduced January 26, 1942. Referred to the Committee on Agriculture and Forestry.

### NATIONAL FORESTS

H. R. 6502—MANASCO—To change the name of the Black Warrior National Forest to the William B. Bankhead National Forest. Introduced January 30, 1942. Referred to the Committee on Agriculture.

### NATIONAL PARKS

H. R. 6425—SACKS—To provide for investigating the matter of the establishment of a national park in the old part of the city of Philadelphia, for the purpose of conserving the historical ob-

## Financial Statement

### The American Forestry Association

#### BALANCE SHEET AS OF DECEMBER 31, 1941

ASSETS		LIABILITIES AND SURPLUS	
Cash .....	\$10,961.86	Accounts Payable .....	\$7,064.91
Accounts Receivable .....	1,951.41	Reserve For Prepaid Memberships .....	23,912.42
Accrued Interest Receivable .....	1,631.59	Surplus .....	286,103.36
Inventories .....	9,494.03		
Deferred Charges .....	2,460.42		
Endowment Fund (Including Real Estate) .....	287,684.91		
Furniture and Equipment .....	2,896.47		
<b>TOTAL .....</b>	<b>\$317,080.69</b>	<b>TOTAL .....</b>	<b>\$317,080.69</b>

#### INCOME AND EXPENSE ACCOUNT FOR YEAR ENDED DECEMBER 31, 1941

EXPENSE		INCOME	
General Administration .....	\$26,600.90	Membership Dues .....	\$51,602.35
AMERICAN FORESTS Magazine .....	33,863.86	Advertising .....	12,926.24
CONSERVATION Magazine .....	1,689.23	Interest .....	6,580.72
Membership .....	15,398.01	Donations .....	899.14
Forester's Office .....	3,797.93	Forester's Office .....	2,456.35
Educational Publicity .....	5,108.26	Miscellaneous .....	7,956.21
		Sale of Publications .....	1,758.25
		CONSERVATION Magazine .....	2,154.91
		Operating Loss .....	124.02
<b>TOTAL .....</b>	<b>\$ 86,458.19</b>	<b>TOTAL .....</b>	<b>\$ 86,458.19</b>

#### AS TRUSTEE FOR AMERICAN FOREST FIRE MEDAL PROJECT

Expenses .....	\$27.83	Receipts .....	\$38.36
<b>Total Balance this Fund December 31, 1941 .....</b>		<b>\$2,581.38</b>	



jects and buildings therein. Introduced January 21, 1942. Referred to the Committee on the Public Lands.

#### PUBLIC DOMAIN

H. R. 6435—MURDOCK—Authorizing an appropriation for experimentation in revegetation and reforestation on the public domain. Introduced January 22, 1942. Referred to the Committee on the Public Lands.

## PALM GARDEN TO BE DEDICATED TO DR. BAILEY

IN OBSERVANCE of the contributions to horticulture of Dr. Liberty Hyde Bailey, the Fairchild Tropical Garden of Coconut Grove, Florida, will dedicate on March 15 as a monument in his honor a palm glade on the shore of Biscayne Bay. Known throughout the world for his horticultural work Dr. Bailey will be eighty-four years old on March 15 and the glade of tropical palms is designed to honor him and to be a mecca where garden lovers visiting in the South may see what tropical palms really are.

Of Dr. Bailey, David Fairchild, founder of the Fairchild Tropical Garden, says:

"From a morning, when, leaning on their hoe handles, he and his father discussed the value of an agricultural education and he decided, rather against his father's wishes, to go to the first Agricultural College, just established in a tiny clearing in the forest near Lansing, Michigan, L. H. Bailey has followed a course so idealistic, and yet so practical and constructive, that through his writings and teachings he has encouraged, as perhaps no other man has, the building of our modern horticulture.

"His efforts to better country life, to conserve our forests, to improve our rural schools, to build departments of horticulture in our colleges, to stimulate plant selection and plant breeding, to teach landscape gardening for our homes and, through his *Hortus* and his *Encyclopedias*, to put within reach of all plant lovers the means of determining what species of plants they are working with and the available knowledge regarding them, have been hereulean. \* \* \*

"It is perhaps no wonder that one with such a keen sense of the beauties of plants should have turned his attention to the 'Queen of the Plant Kingdom' as the palms are called, but it is surprising and remarkable that, at an age when most men drop back into slippers ease, this lover of plants has gone out into the jungles of Central America, Mexico, Cuba, and other countries and done the strenuous collecting work which much younger men often shrink from. He has built up at his home in Ithaca, as a part of his Herbarium, one of the best collections of palm

#### WATER AND STREAM CONTROL

H. R. 4648—CURTIS—To amend the act authorizing construction of water conservation and utilization projects in the Great Plains and arid and semi-arid areas of the United States. Introduced May 5, 1941. Amended and passed by the House January 19, 1942. Referred to the Senate Committee on Irrigation and Reclamation January 20, 1942.

specimens in the world, and he has published many articles to clarify the classification of these surpassingly beautiful organisms and done everything in his power to arouse a deep interest in them."

It is the hope of Dr. Fairchild and those associated with him that the memorial to Dr. Bailey may be the gift of the greatest possible number of his friends and admirers. To this end it is asking for contributions not in large amounts but in sums of not over \$1 from each donor. At the dedication services on March 15 an album is to be placed in Dr. Bailey's hands inscribed with the names of those who feel indebted to his life activities and have subscribed to the glade. Subscriptions may be sent to the Fairchild Tropical Garden, Coconut Grove, Florida.

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# NEW BOOKS and OTHER PUBLICATIONS

A list of Selected Books on Forestry and related fields of Conservation is available to members of The American Forestry Association on request.

STANDARDIZED PLANT NAMES, Second Edition, by Harlan P. Kelsey and William A. Dayton. Published by Mount Pleasant Press, Harrisburg. 675 pages. Price, \$10.50.

Containing over 90,000 standard common and scientific plant names, this new edition is the most complete book of its kind ever published in America. It includes in alphabetical order sixty-two special plant lists such as aquarium plants, cereals, lumber trade names, the orchid genera, poisonous plants, range plants, drug plants, state flowers and trees, and plants of economic use. Among other things, it features a glossary as well as the accepted pronunciation of all plant names.

Bringing order out of the chaos which has existed in plant names and plant products the world over, this book will prove indispensable to gardeners, nurserymen, foresters, lumbermen, seedsmen, florists, pharmacists, educators, editors, librarians and scientists.

TALL TIMBER, by Stewart H. Holbrook. Published by the Macmillan Company, New York. 179 pages. Illustrated. Price \$1.50.

As dramatically, authentically and entertainingly as Stewart H. Holbrook gave us a history of American lumbering in *Holy Old Mackinaw*, he here presents the story again, but this time for youngsters of from ten to fourteen years of age.

They meet the early lumberjacks and white-water men and follow their fortunes through those roaring eras when the timber line moved west and south. They watch them fight the elements and each other, with equal courage and vigor. They listen to their bunkhouse tales and songs. They see them meeting death bravely in the woods or on the rapids while they keep the wheels of industry turning and our nation has time to grow up. There are thrills here for every young American in dynamic history which is still in the making and in which everyone can yet find a part. A book every boy and girl will delight in reading.

FISHING FOR FUN IN SALTY WATERS, by Erl Roman. Published by David McKay Company, Philadelphia. 173 pages. Illustrated. Price \$1.50.

Here is a book that tells about salt water fishing in a language everybody can understand. It answers the questions of beginners and of veterans, whether they wet their lines in shallow bays, on tidal flats, over reefs, in the surf, or out on the open sea. A copy belongs in every tackle box to guide the angler in such matters as plug and fly rod casting, bottom fishing, trolling, rods, reels and lines, tides and methods.

The publications listed below must be ordered direct from the addresses as given and not through the Association.

Wild Animal Damage to Seed and Seedlings on Cut-over Douglas Fir Lands of Oregon and Washington, by A. W. Moore. U. S. Dept. of Agr. Tech. Bull. No. 706. Supt. of Docs., Wash., D. C. Price, 5 cents.

Proceedings of the New Hampshire Academy of Science. Vol. 1, No. 1, 1939, and Vol. 1, No. 2, for 1940. University of New Hampshire, Durham, N. H.

Stumpage and Log Prices for 1939. For. Ser., U. S. Dept. Agr. Sta. Bull. 75. Supt. of Docs., Wash., D. C. Price, 10c.

Food Habits of the American Coot, by John C. Jones, Fish and Wildlife Service. Wildlife Research Bull. No. 2. Supt. of Docs., Wash., D. C., Price, 25c.

Pennsylvania Game Commission, Biennial Report 1939-40. Pennsylvania Game Commission, Harrisburg, Pa.

Forest Resources of South Georgia, by M. M. Lehrbas and I. F. Eldredge. Sou. For. Expt. Sta., New Orleans, La. Supt. of Docs., Wash., D. C. Price, 20c.

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## AMERICA'S FRONT-LINE FORESTS

(Continued from page 104)

transportation of materials and workers.

Better than anyone else, perhaps, the United States Forest Service realizes the job before it in Southern California. It already has set up a highly efficient organization under the leadership of one of its most skilled administrative veterans, William V. Mendenhall, in the role of forest defense coordinator. In consequence, the personnel and equipment resources of the Angeles, San Bernardino, Los Padres and Cleveland forests have been welded together so that in time of emergency available Forest Service forces may be instantly dispatched to the place of greatest need. State and County Forestry Departments have joined in the program.

Forest Service resources have never been entirely adequate in this area, but now that America faces her greatest trial and Southern California has become a focal point of much of the nation's day-and-night industrial output of war's essentials, the available forces of the Service here

are plainly insufficient.

Two things are needed at once—additional funds and additional manpower. The first should be allotted by Congress without delay. The second may be supplied in part by selective service authorities through immediate establishment within the forests of new camps of conscientious objectors to be trained as firefighters.

Such action, swiftly taken, will enable the Forest Service, in the short time remaining before the 1942 fire season opens, to prepare to cope with the unprecedented perils that threaten America's front-line forests. The protection of these forests has always been important to Southern California, but now, in this hour of worldwide battle, it has become a matter of grave concern to the whole nation.

## CONGRESS

(Continued from page 137)

The House Subcommittee on Agricultural Appropriations comprising Chairman Malcolm C. Tarver of Georgia, with Representatives Leavy of Washington, Terry of Arkansas, Collins of Mississippi, Lambertson of Kansas, Dirksen of Illinois, and Plumley of Vermont, has concluded executive hearings on Forest Service and other Department of Agriculture estimates, as recommended in the President's budget message of January 7. The attitude of the Committee in respect to appropriations recommended will not be known until the Agricultural Appropriations bill is reported out of committee. However, in view of the pressure being put on Congress to cut activities not essential to prosecution of the war, many of the conservation items, as given in the February issue of AMERICAN FORESTS, will probably be reduced.

### National Forest Purchases

The annual report to Congress of the National Forest Reservation Commission for the fiscal year ending June 30, 1941, reveals that during the 1941 fiscal year the commission approved for purchase a total of 195,818 acres for addition to national forests at a total cost of \$805,479, an average of \$4.11 an acre. Of this area, 128,545 acres valued at \$504,872 are obligated against the appropriations for the 1942 fiscal year. During the 1941 fiscal year payment was made and title acquired to 531,760 acres at a total cost of 1,979,591, an average of \$3.72 an acre. Summary of Weeks' Law purchases since

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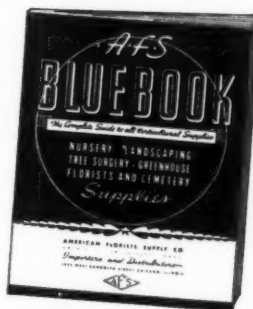
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1910 includes the purchase of 17,558,928 acres at a total cost of \$65,969,440 with net appropriations during this period amounting to \$83,642,735.

In view of the drastic cut in the 1943 budget estimate for national forest land acquisition, as compared with the current

year, the following excerpt from the report is significant: "Conservation lands will be factors of major importance in all future programs of public employment to alleviate the ills or promote the readjustment of economic disorganization."

## SOUTHERN FORESTS AND THE WAR

(Continued from page 115)

without reference to the swarms of small boats such as mine layers and mosquito torpedo boats, which are being built, many of them of all-wood construction.

Lumber from the southern pine forests has played such an important part in the camp building program that the impression might prevail that pine is the only southern species of value in the war effort. This would be a serious misconception. Aside from its use in the production of boxes, the hardwood lumber of the South is finding a wide utilization for war-time needs. For instance, an order was recently placed by the Army for an additional 2,100,000 cots. To make these cots will require 21,000,000 feet of lumber, and a large part of it will be the rock elm and maple and beech of the southern forests. Hardwoods, especially oak, have been used extensively in the building of the small boats which play such a large part in modern naval warfare. Large quantities of hardwoods have gone into the manufacture of such small items as tent pegs; and, indirectly, there has come about an increased use of hardwoods as a result of the government's decision to use only wood office furniture in an effort to divert steel from use in the production of such products.

Another southern wood, cypress, has played a big part in the new shipbuilding program. Cypress as a boat-building wood has a long record of proven service behind it, and this has been recognized in the specification of cypress in the building of the thousands of small craft now being rushed to completion. And in indirect ways also cypress is contributing to the winning of the war. Modern warfare needs vital chemicals; in the production of many of these chemicals the use of cypress-built tanks and vats is imperative. A southern sawmill cutting such tank stock can get a preferred priority rating as quickly as a manufacturer of gunpowder or airplanes. You've got to have cypress—and other southern woods—to carry on this war.

The question which all this is certain to arouse in the mind of any conservationist is: What effect is this going to have on the future supply of timber? Will this abnormal demand for war-time needs bring about such a depletion of the South's timber supply as to jeopardize the future of sustained yield? These are natural and

fair questions. They deserve a frank answer. A quick glance at Southern pine's balance sheet of growth and drain shows that despite predictions dating back as far as 1907 that Southern pine forests would soon be cut out, the trees in the South kept on growing—growing almost as rapidly as they were being cut. And the recent Forest Survey by the United States Forest Service revealed the astonishing fact that sixty per cent of the total land area of the South is still in timber, growing trees, and that in 1936 (the year of the survey) the total southern sawtimber cut for lumber and other forest products amounted to 21,800,000,000 board feet, while the growth in the same year amounted to 20,403,000,000 board feet. Fire and other damage increased the total depletion slightly but taking into account the growth of trees less than sawtimber size, the survey showed that for all practical purposes there was an approximate equilibrium between drain and growth in the South.

It is obvious that this increased demand growing out of the war for the products of the southern forests must, to some extent, constitute an increased drain on the forest resources, must upset that near-balance prevailing between growth and drain. But, after all, the only legitimate objective of conservation is utilization in one form or another. There is no supposable purpose in conserving commercial forests except for their use in the future. What conceivable use of them at some undetermined time in the hazy future could compare in importance with their use in the present desperate struggle for self-preservation? It is a well-known fact that the demand for lumber normally goes in waves of peaks and valleys. After the war-time needs are filled there may come years of slack demand for lumber when production will fall off—but the trees will keep on growing.

Aside from this aspect of the matter, it must be borne in mind that the tremendous increase in the demand for lumber for purposes of war does not reflect a correspondingly great increase in the drain on the forests. Parallel to this increased demand there has been a decrease in the normal demand. The thousands of earloads of lumber moving into camp construction have an offset in the thousands of earloads that are *not* moving into residential construction and other normal



channels. The total production of lumber by the southern sawmills during the war years will not be so much greater than the normal production as to create any tragic emergency.

The manufacturers of southern pine lumber have a saying: "There will always be southern pine." They recognize and

appreciate the extent of the war-time demand on their timber resources; but they look out over the billions of feet of timber still growing on their lands and on the millions of acres of thrifty young trees coming on to supply the needs of future years and see no reason to modify their optimistic slogan.

## THE FOREST OF THE PILGRIMS

(Continued from page 127)

The dominant pine is the white pine. If the island should be repeatedly burnt and thereby reduced to the condition of the present type of forest southwest of Plymouth, the pitch pine would be the only pine that could master the drought conditions. In other words, the white pine was once the predominant tree from Billington Sea to the Canal.

I have already said that the Pilgrim "juniper" was red cedar. This tree is common on the open coast land on Boston's south shore and must have been used as an ornamental by the colonists, as it is still found about old cellar holes. The tree cannot exist in a virgin forest and is not in evidence on this island.

Sassafras, another sweet wood of the Pilgrims, is in evidence. There are many sassafras seedlings springing up on the forest floor—the seeds coming from the few veteran sassafras trees.

The gray birch is only found on the margin of the island where it can lean out into the sunlight. It cannot endure the shade of the towering pines. Its relative, the yellow birch, has almost been exterminated, as only two live specimens were discovered. The yellow birch must have been the sweet birch of the Pilgrims, although its wood is not so fragrant as that of the black birch.

The holly grows on the island, which is more than it is able to do on the fire-burnt plains. The ash and walnut are absent. That is not strange, as the colonists exterminated them for furniture.

The largest hardwood on the island is the beech. This tree was undoubtedly much commoner before forest fires. I have no reason to offer as to why the Pilgrims did not mention the beech in their earliest records, unless the tree did not go down to the sea. The settlers must have been familiar with the European beech.

The commoner oaks of the Pilgrims were probably the black oaks. The white oak was not so capable of growing in the deep forest. Only one veteran white oak survives on the island. The scrub oak was not the commonest oak to the Pilgrim eye, as it was limited to the sandy shores. The increasing of the sand barrens has nearly exterminated the larger species, and has made the dwarf species more widespread.

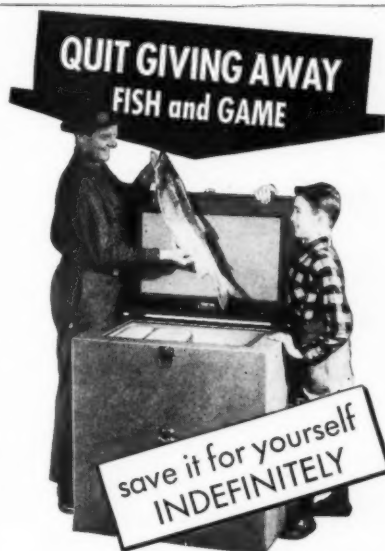
At least one tree which the Pilgrims

"knew not" on first meeting must have been *Nyssa sylvatica*, which the reader may know by one of the following numerous names: tupelo, pepperidge, sour gum, or black gum. This tree, which prefers moist ground, has reached maximum size on the island. When the forest had rich moist soil, the sour gum was more common, and its leaves undoubtedly brightened the autumn landscape with their crimson color. It is a native American, and would not have been familiar to the Pilgrims any more than its showy relative, the flowering dogwood.

The remaining tree which is competing for dominance on the island is the hemlock. This also is an American tree. It was probably the main tree to darken the Pilgrim forest, although it is doubtful if it was so abundant toward the tip end of the Cape.

The white cedar of the famous cedar swamps is not present on this island and was probably unknown to the Pilgrim exiles in the first years of the settlement, when it was more expedient to stay near the shore.

The Pilgrim forest was essential to Pilgrim existence. Today's forest, such as it is, is just as essential to the well-being of



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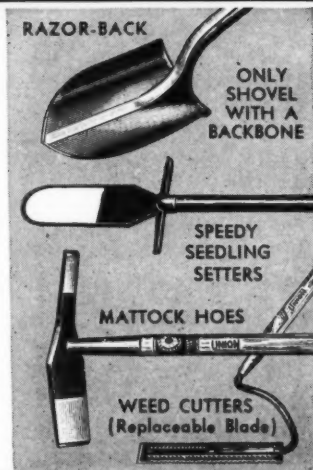
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the citizens of Plymouth and Barnstable counties. The ravages of the gypsy moth have made the Old Colony woods take on the aspect of a visitation by an ancient plague. The lakes remain, but without the surrounding mantle of a green forest. That which the fire-bug hath left, hath the gypsy moth eaten. When the "canker-worm" takes away the forest, we might as well fold up our tents like Arabs of old and steal away in the night. The writer appreciates the attempt of the authorities to spray the roadside trees. However, a stitch in time by creosoting the winter egg masses of the gypsy moth would have saved nine sprayings now.

The Plymouth woods of today are more valuable for sentimental reasons, as well as for recreation, than for fuel, or for shipping. Let us guard our treasures of today that the forest remnant we have will not follow the virgin forest of the Pilgrim days. As for the island, it is

safely guarded by folks who care. On the island, I noticed blazes made by the use of adhesive tape instead of the ax. My heart rejoiced that some youngsters were being taught conservation, and could be "trusted on the island." There is still great need of a more general understanding of what is meant by conservation. The first step of recovery will be to live down the idea of "annual burnings for blueberries." Stricter fire laws may take care of that, but not without education. The annual "pasturing" of gypsy moths by the wholesale must also be checked. With enough appreciation and understanding, and when enough people care, we may restore the forest of the Pilgrims. The Miles Standish State Forest is a beginning in that direction. It will take several centuries under expert management to restore the depth of humus and resulting tree species found by the Pilgrims.

## THE DOCTOR'S PIT

(Continued from page 132)

immediately had it examined by the medical gentlemen. They gave it as their opinion the wounds were inflicted by the bullock.

"The next day I had the remains deposited in their last resting place. I have caused his grave to be built over with bricks, and perhaps his friends may send a stone to be placed (with an inscription) upon it."

The exact place of burial is unknown, but he lies somewhere in Kawaiahaeo Churchyard. On the wall of the church there is a tablet, in Latin:

"Here lies Master David Douglas, born in Scotland in 1799, who, being an indefatigable traveler, was sent out by the Royal Horticultural Society of London, and fell victim to science in the wilds of Hawaii on the 12th day of July, 1834. 'Tears are due to wretchedness, and mortal woes touch the heart'—Virgil."

On July 12, 1934, a stone monument was unveiled at the scene of his death. Another one has been erected at his old home in Scotland.

Bolabola was a native boy, living with his parents and other bullock hunters, near the grass hut of Edward Gurney. One night in camp, after many years had swung by, grouped around a fire on the higher and colder slopes of Mauna Kea, some other natives and a party of surveyors heard him tell a story. Bolabola was an honorable and well known man.

"No, the haole (foreigner) was murdered. We all felt so at the time, but were afraid to say so, and only whispered it among ourselves. Before my father and Old Kahue (a noted Hawaiian) died, they both repeated the story to me. The haole carried a good many gold coins to pay the porters. Yes, and he paid

well. Two dollars a day in coins or goods.

"There was the matter of the haole's hat. He had one when he left on his last journey. It was never found. It was not in the pit where he fell. Why not? Where was his money? Only a few coins were found in his pockets, this fellow Gurney said. Yet the haole was just commencing a long journey that would cost money for help and for food."

Edward Gurney left the Kukaiau country shortly after the tragedy. Where did he go? Some say he was one of the "Botany Bay Boys" who disturbed the public peace in California, where some of them were hanged by vigilantes. Some are of the opinion he remained somewhere in the Sandwich Islands.

Standing in Kaluakauka today, 6,000 feet up the side of Mauna Kea, one sees no water in the crater. The wall around it is still in place, except where the roots of a giant koa have crowded the stones away. The sides are overgrown with wild raspberry bushes. The entrances may still be seen, where wild cattle came to drink. Quite a number of lovely evergreen trees have been planted inside the wall, in memory of the good and great man whose name they bear.

It was a warm, quiet day. A powdery mist drifted up from the Pacific. Native birds were whistling very softly, high among the leaves of the koa forest.

In The Doctor's Pit there is silence, and the sweet, friendly fragrance of Douglas fir.

(The picture of Dr. Douglas on page 124 was made from a photograph by Professor Balfour, of the University of Edinburgh, taken from a print in the "Companion to the Botanical Journal" in the University Library.)

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PACIFIC COAST AGENTS:

Hercules Equipment & Rubber Co. 550 Third St., San Francisco, Cal.  
Carco-Conwhit Sales Co. 520 S. W. Pine St., Portland, Ore.  
The Conwhit Co., Klamath Falls, Oregon.  
Mill and Mine Supply, Inc. 2700 4th Ave. S., Seattle, Wa.  
Roy G. Davis Company 617 E. 3rd St., Los Angeles.



# BETTER TREES CHEAPER

To improve the product and still lower the cost is an American miracle no longer news in automobiles, airplanes, electrical appliances, etc. But we suggest the same process has been at work in evergreens, shrubs, fruits, etc. Here are some concrete examples:—

## Better, because:—

### 1. New Inventions

After 10 years' work, Mr. Joseph Gable has introduced a new race of Azaleas, colorful as the Japanese Kurumes, but American-made for our hardy climate. All colors, neat bushes, some of them fully evergreen in the north. Priced as low as 75c.

Kelsey Berrybush Yew, our introduction also, has more red berries than any other Yew. One of the new *Taxus media* race—another American made hybrid. From 30c up.

### 2. Improved Models

Huge Hybrid Blueberries are getting well known. Bear more, larger, tastier fruit. We have them. But less well known things include:

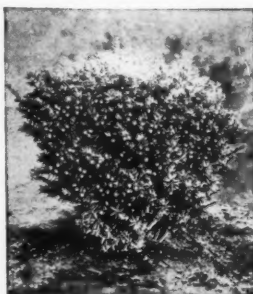
Forms of the High-bush Cranberry higher in pectin than others. Better Cranberry jelly.

Grafted hardy Nut Trees, heavier yield of nuts, and proportion of meat to shell doubled.

Special new kinds of Hollies, yielding more and larger berries than ever before.

Espalier and Dwarf Fruits to double or more the yield of fruit in a small garden. Better fruit, too.

An agreeable absence of queer, miracle plants insufficiently tested and for which extravagant claims are made. All the good older varieties are listed unless absolutely replaced by something provably better.



**Newer, Better Models**  
Top: Berrybush Yew, more berries than ever.  
Center: Hardier, fragrant, Magnolia "Waterlily."  
Bottom: One of the new Gable's Hardy Azaleas.

## Cheaper, because:—

### 1. Mass Production

Trees in small sizes for forestry use are priced on a basis that reflects growing several million a year of each kind. Prices run from less than 1c and up in large quantities.

Upright Japanese Yew is also based on a production of about a million a year. Two-year olds \$50 per 1,000.

### 2. Standardized Sizes

Young 1- and 2-year old grafted varieties are offered in uniform sizes around \$1 each. Real, rare kinds usually very expensive.

Rhododendrons and Mt. Laurel in standard smallest size with earth-ball as low as 25c each.

Larger trees, evergreen and deciduous, can be purchased in special blocks in special sizes so arranged that the small buyer gets advantage of large unit handling. See page 50 of catalog.

### 3. New Production Methods

A few years ago the beautiful Franklinia was rare and costly. Now, due to learning the secret of rooting, it is mass produced from \$1 and up.

This year we offer Named Hybrid Rhododendrons cheaper than ever before because of a method of production by rooted cuttings. 5 for \$3.75. Eight kinds offered.



**Standardized Size**  
Insert shows Mt. Laurel Size 1, low as 25c each. Size 1 Rhododendrons 3 years after planting shown in photo.

## Honest, More Accurate Specifications

"More of a textbook than a catalog" writes one customer. Fruit trees, for instance, each variety is considered for cross-pollenizing, age of bearing, hardiness, proper spacing. No pains have been spared to make all descriptions complete and accurate. Yet it is brief, in 52 large pages is more reading than an average 200-page novel.

### See If You Don't Agree!

We answer for each plant: when it blooms, color, size, hardiness, soil requirements, prices in several grades. This we do for 1,002 kinds, including:

- 191 Hardy Perennials
- 114 Coniferous evergreens
- 179 Broadleaf evergreens
- 40 Vines
- 235 Shrubs
- 243 Deciduous trees

And 150 of the above kinds are shown in photographs (23 in natural color).

**One copy Free if you write now.**

### Why Print Such A Book?

Frankly, we think we will make a profit. We think readers will be thrilled with the wealth of real, practical information that is not elsewhere available except in encyclopedias. We think they'll want to try some of these plants for their own gardens—not all our readers, but enough.

### Kelsey Prices Are Famously Low

Small sizes as well as large. Single unit prices as well as wholesale quantity offers.

**(25 cents charge west of Iowa)**

# KELSEY NURSERY SERVICE

50C CHURCH STREET, NEW YORK, N. Y.

(Established 1878)



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